REQUIREMENTS FOR SUCCESSFUL BREAST FEEDING

by

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Believe this ſolemn truth, almoſt every woman is capable of ſupporting her babe; and great will prove the advantages, both to herſelf and her infant.

Letters to Married Women

Smith, 1792.

"Breast feeding is an integral part of the reproductive process, the natural and ideal way of feeding the infant and an unique biological and emotional basis for child development...."

.....it is therefore a responsibility of society to promote breast feeding and to protect pregnant and lactating mothers from any influences that could disrupt it".

WHO (1979) para 7.

Detail from "Presbyterian chatechising" by Philip, National Gallery of Scotland.

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DECLARATION OF THE AUTHOR'S PARTICIPATION IN THE WORK SUBMITTED

The composition of this thesis is that of the author, who was assisted in the design of the studies by Doctor P.W. Howie. The author was responsible for the organisation of the research, recruitment, study and follow up of the mothers and babies both in hospital and at home, design and testing of the questionnaires, and analysis of the data.

While registered as a candidate for this degree, the author was not registered as a candidate for another award of the CNAA or of a University.

The candidate attended the seminars of the Medical Research Council's Reproductive Biology Unit and the University of Edinburgh's Department of Obstetrics & Gynaecology as well as meetings of the Nursing Research Unit, University of Edinburgh, in connection with the programme of research, and in partial fulfillment of the requirements of the degree of Doctor of Philosophy.

In addition, the candidate attended courses in computing and in questionnaire design at the University of Edinburgh, as well as regular seminars of the Edinburgh Nursing Research Interest Group.

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ABSTRACT

This programme of research aimed to investigate requirements for successful breast feeding by defining the factors which contribute to success and by examining management strategies which would be of practical use to health professionals caring for the breast feeding mother.

An extensive and critical review of the literature showed a rapid premature discontinuation of breast feeding, the most common reason being "insufficient milk". Other factors affecting success varied widely from physical to behavioural.

A programme of five studies arose from this review.

Studies A,B and C were designed to investigate how early management of breast feeding in hospital was related to successful breast feeding. It was concluded that although hospital policies were associated with success, the social environment and background of the mother, as measured by social class, was of more fundamental importance.

A small experimental study (Study D) in which 28 women from mixed social class groups were given additional home support in the form of fortnightly visits, showed that women in the study group continued to breast feed longer than women in a closely matched control group. No women in the study group discontinued breast feeding within the first 12 weeks, and none stopped due to "insufficient milk".

Study E involved extensive interviews at 12 weeks postpartum with 105 women to investigate problems encountered and care provided. It was found that neither the number of problems nor the amount of care varied across social class groups. However, the quality of care and the way in which it was provided was crucial to success.

The thesis concludes with some recommendations for the care of breast feeding women, made in the light of these research findings, existing studies, and the professional judgement of the researcher.

CHAPTER 1

GENERAL INTRODUCTION AND REVIEW OF FACTORS RELATED TO SUCCESS IN BREAST FEEDING

1.1 INTRODUCTION TO THE THESIS

Breast feeding is now recognised to be more than simply one way of feeding a baby. The Worlth Health Organisation has stressed the right of every child to be adequately nourished as a means of attaining physical and psychological health: this fundamental objective means that every society has a responsibility to ensure that breast feeding is promoted and protected so that "children may develop to their full potential" (WHO 1979). Wide inequalities in child health exist both between and within different communities, and if these are to be reduced, it is necessary to give attention to the early nutrition of the infant, which has been recognised as the most important factor in child development (Black Report 1980).

There is increasing awareness that breast feeding actively promotes health, so that by breast feeding, the infant is not only fed an adequate diet, but is protected from adverse environmental influences by the unique immunological properties of breast milk. An adequate interval between births is important for the health of the mother and her child (Morley 1979); the birth spacing effect of breast feeding is a major contribution to this objective, particularly in societies where breast feeding is prolonged and alternative methods of contraception are unavailable or unacceptable.

The act of breast feeding itself may promote the powerful feelings of closeness and warmth between mother and child, which contribute to family health and happiness. Finally, the effects of breast feeding may extend beyond the child, his mother, and her family, if breast milk is viewed as a valuable natural resource with far-reaching effects on national economics and food production.

A full disucssion of these benefits can be found in Appendix 1.

In Western, "developed" society, women are responding to the knowledge that "breast is best", and are choosing to breast feed in increasing numbers. In some British communities, as many as 80% of new mothers may choose to breast feed; (for review see Chapter 1.2.1); several factors may have contributed to this trend, such as increased publicity for the benefits of breast feeding, more enthusiastic advice from midwives, health visitors and doctors and possibly a reawakened desire to use natural foodstuffs. However, despite this increasing incidence of breast feeding, many mothers discontinue breast feeding prematurely, especially in the vulnerable early weeks of the neonatal period (1.2.1). When practical problems become sufficiently severe to interrupt the course of nursing, this not only removes the benefits of breast feeding from the child but also undermines the pleasure of early motherhood.

It has been suggested from many sources (for example, Raphael, 1976) that modern society provides little support to help new mothers overcome the problems of early motherhood, in which breast feeding plays a major part. The structure of the small, nuclear family does not encourage supportive networks which are important to help mothers overcome problems. Professional support mainly from midwives and health visitors is available, but resources are often scarce and are frequently ineffective in forestalling the premature discontinuation of breast feeding.

As a midwife, the author of this thesis is concerned that mothers and babies encounter problems which lead to the discontinuation of breast feeding in spite of the mother's desire to continue. The aim of the programme of research presented in this thesis is to examine the practical problems and management of breast feeding from a nursing

perspective. This involves two interrelated objectives which are:-

1. To define the factors which contribute to success in breast feeding.

2. To investigate management strategies which could be of practical use to health professionals caring for the breast feeding mother.

The research was carried out in the Medical Research Council's Reproductive Biology Unit in Edinburgh, which is directed by Professor R.V. Short. The terms of reference of the unit are "to advance research in human reproduction", and a major part of the unit's activities has been to examine the importance of breast feeding in regulating human fertility.

"Breast feeding....prevents more pregnancies the world over than all artificial methods of contraception put together" (Short, 1976).

Dr. P.W. Howie and Dr. A.S. McNeilly directed the studies into human lactation, starting with the objective of defining how breast feeding induced a natural state of infertility. As a logical progression of these studies, it was recognised that if breast feeding were to be promoted as an effective means of birth spacing, then investigation of factors which encouraged its continuation was equally necessary. Early studies in the unit's lactation programme (1.2.2.1) suggested that the factors which adversely affected breast feeding were more likely to be behavioural and environmental than endocrinological. The author of this thesis is the midwife member of the research team, and this thesis presents research which was generated by a nursing perspective and, as such, is original work.

1.2.1 THE INCIDENCE AND DURATION OF BREAST FEEDING.

(i) Western Societies

The incidence of breast feeding is now increasing in Western societies, in contrast to the marked decline which started in the 1930's-40's, (Winikoff & Baer, 1980) and continued until the late 1960's. Since the early 70's however, Western "developed" societies have shown a consistent increase in the numbers of women choosing to breast feed their own babies. This is well documented in reports from a variety of Western societies (Auerbach, 1979; Coles et al, 1978; DHSS, 1974; Howie & McNeilly, 1980; Newson & Newson, 1974; Sjolin,1977)

These studies also report consistent and rapid discontinuation of breast feeding. Martin (1978) quotes a figure of 50% of mothers who started to breast feed having stopped by 6 weeks postpartum; West (1980) states that 10% of her sample of Edinburgh women stopped with the first week, and 50% within 12 weeks postpartum. Newson & Newson (1974), reviewing the practices of 700 mothers in the north of England, found that over half of them stopped by 4 weeks postpartum. These recent reports of continuation rates do not differ radically from an earlier study (Hytten, Yorston & Thomson, 1958) where a failure rate of 75% by 3 months was reported. Perhaps the lowest figures are those of Arneil (1965); at that time, 69% of all babies in Scotland were not breast fed at all, and only 5% were breast fed beyond 4 months of age.

The consensus of all these studies is that although the incidence of those women starting to breast feed is increasing, discontinuation occurs early, mostly within the first 12 weeks of breast feeding.

(ii) "Developing" societies:

The pattern in "developing" societies is markedly different. Figures show a falling incidence of women both choosing and continuing to breast feed in many countries, including Chile, (20% at 6 months), Jamaica, (10% at 6 months) and Hong Kong (16% at 6 months; Kneebone 1976).

The most comprehensive data appear in the WHO Collaborative Study (1979); the rate of breast feeding is declining, both in numbers starting to feed and in numbers continuing (Fig. I), especially among women in urban and more affluent communities. Women in traditional rural societies continue to breast feed (Greiner, 1979).

One report from a Chinese population in Sarawak (Kol 1980) highlights the effect of the changing patterns on one urban population. Despite the traditional Chinese practice of rest and isolation of the young mother for the first 30 days, only 67% of the women breast fed at all, and only 10% fed for longer than 3 months. One interesting point was that the rate of breast feeding among Chinese-educated Chinese mothers was 80%, while among English educated Chinese mothers it was only 37%; the duration of feeding was the same in both groups.

The effect of Western practices on populations where breast feeding used to be the norm was further expanded by Goel et al., (1978), who examined infant feeding practices among immigrants in Glasgow. They found that most of the Asian, African and Chinese mothers interviewed had not wanted to breast feed after arriving in Britain, and those who chose to breast feed had a relatively short duration of breast feeding.

Summary:

Although mothers in Western society are now choosing to breast feed, they continue to stop prematurely. A matter of concern is that mothers in developing societies, who are most in need of the nutritional,

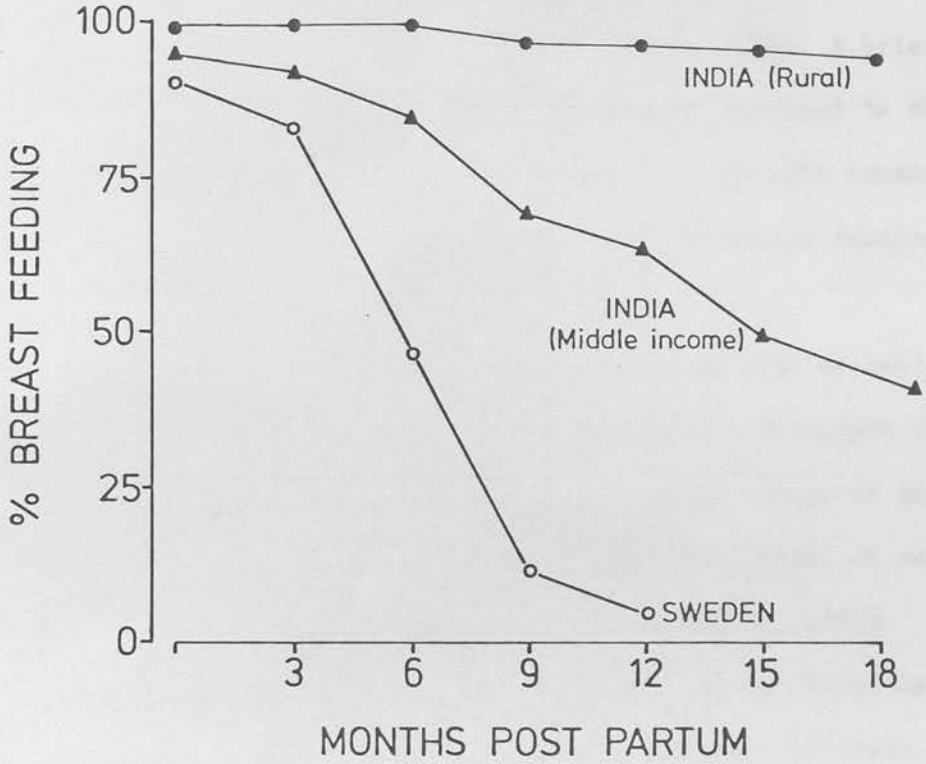

Fig. 1 Breast Feeding Rates (adapted from WHO 1979)

protective and birth spacing effects of breast feeding are now choosing to bottle feed.

1.2.2 FACTORS RELATED TO SUCCESS IN BREAST FEEDING

1.2.2.1 The hormonal control of breast feeding

The two hormones most closely involved in the synthesis and release of breast milk are prolactin and oxytocin. (For review see Cowie, Forsyth & Hart, 1980; McNeilly, 1977; Vorherr, 1978). A brief description of the two mechanisms most closely involved in the success or failure of breast feeding is now given because this knowledge is essential to fully understand the processes of breast feeding failure.

(i) Milk synthesis and secretion

Milk synthesis and secretion appear to be mediated by prolactin, which is released in response to stimulation of the nipple (Fig. 2(a)). Milk secretion is inhibited in pregnancy by the action of steroids, and full milk production is only initiated when the levels of oestrogen and progesterone fall immediately postpartum (McNeilly, 1977).

Maintenance of breast feeding is dependent on the continued secretion of prolactin and on the continuation of suckling; treatment with bromocriptine, a prolactin inhibitor, prevents milk production (del Re, *et al.*, 1973). However, the exact relationship between prolactin release and milk volume is not clear. Aono *et al.*, (1977) reported a close correlation between milk yield and the prolactin response to suckling during the initiation of lactation. This observation suggested that the use of drugs to stimulate prolactin release might improve lactational performance (Sousa 1975). However, Howie *et al.* (1980) studied the prolactin response in more detail, and found no correlation between milk volume and prolactin levels during suckling in the first 6 days. As shown in Fig. 3, mothers producing large milk volumes had a similar prolactin response to those producing small milk volumes. Women who used the breast pump, which acts by suction rather

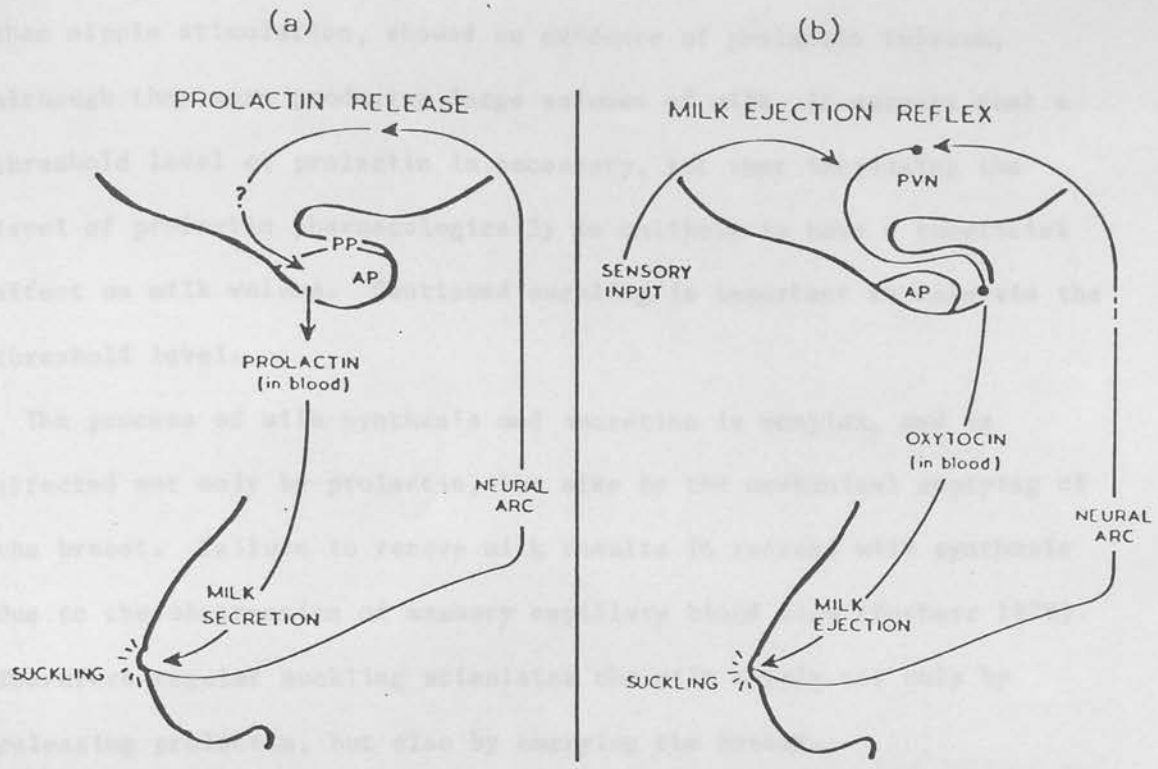

Fig. 2(a) and (b) Prolactin release and milk ejection reflex mechanisms (reproduced from McNeilly, 1977).

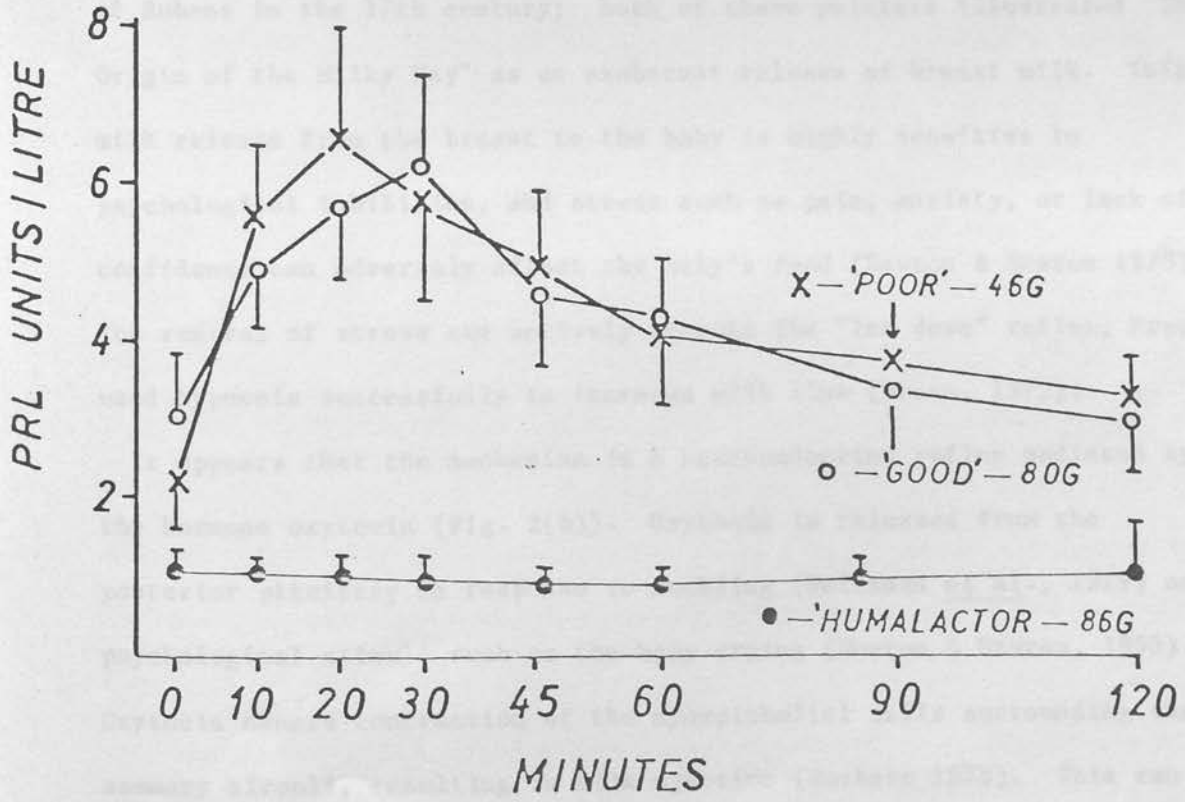

Fig. 3 Prolactin levels in blood during and after a breast feed in "poor" and "good" breast feeding women, and women using the Humalactor. (reproduced from Howie et al. 1979).

than nipple stimulation, showed no evidence of prolactin release, although they were producing large volumes of milk. It appears that a threshold level of prolactin is necessary, but that increasing the level of prolactin pharmacologically is unlikely to have a beneficial effect on milk volume. Continued suckling is important to maintain the threshold level.

The process of milk synthesis and secretion is complex, and is affected not only by prolactin, but also by the mechanical emptying of the breast. Failure to remove milk results in reduced milk synthesis due to the obstruction of mammary capillary blood flow (Vorherr 1978). Therefore regular suckling stimulates the milk supply not only by releasing prolactin, but also by emptying the breast.

(ii) Milk release: the "let down" reflex

The "let down" reflex, or the active expulsion of milk from the breast, has been well-known at least since the time of Tintorretto and of Rubens in the 17th century; both of these painters illustrated "The Origin of the Milky Way" as an exuberant release of breast milk. This milk release from the breast to the baby is highly sensitive to psychological inhibition, and stress such as pain, anxiety, or lack of confidence can adversely affect the baby's feed (Newton & Newton 1978). The removal of stress can actively promote the "let down" reflex; Freud used hypnosis successfully to increase milk flow (Breen, 1975).

It appears that the mechanism is a neuroendocrine reflex mediated by the hormone oxytocin (Fig. 2(b)). Oxytocin is released from the posterior pituitary in response to suckling (Weitzman et al., 1979) or psychological stimuli such as the baby crying (Newton & Newton, 1950). Oxytocin causes contraction of the myoepithelial cells surrounding the mammary alveoli, resulting in milk ejection (Vorherr 1978). This can be recognised by the mother as a tingling sensation of "let down", or may result in leaking of milk from the breast.

There is some evidence that oxytocin release with resultant milk ejection may also occur in a regular rhythmical pattern independent of the baby's feeding pattern (McNeilly & McNeilly, 1978). However, the role of oxytocin requires further clarification. The pattern of release can be irregular, and levels in plasma are very low (5 - 20 pg/ml during suckling, McNeilly, 1977) requiring a highly sensitive assay. There is little direct evidence in women for a link between oxytocin release and milk volume taken by the baby throughout the feed. One study (Lucas et al., 1980) shows little evidence for a role for oxytocin during suckling; some of the women studied showed no signs of oxytocin release, and there was no correlation between milk volume and oxytocin levels. Weitzman et al (1979) similarly showed low levels of oxytocin release, with little evidence for episodic release in women such as is found in animals (McNeilly, 1977).

Huntingford (1961) in a trial of synthetic nasal oxytocin, showed that mothers taking regular doses of nasal oxytocin initiated lactation more successfully than mothers receiving a placebo. The babies had a smaller weight loss on Day 4, a greater feed volume on Day 7, and a bigger weight gain by the 10th day if their mothers were taking nasal oxytocin. It has also been suggested that nasal oxytocin may enhance the onset of lactation for mothers of premature babies (Ruis et al, 1981). This supports the view that oxytocin may well be implicated in milk release. Further work requires to be done in order to clarify the relationship between oxytocin and milk release. It is, however, clear that the let down reflex, however it is controlled, is necessary for successful lactation, and that it can be adversely affected by stress. In practical terms, it is important to recognise the potential effect of stress on milk release, as this interlink between emotions and

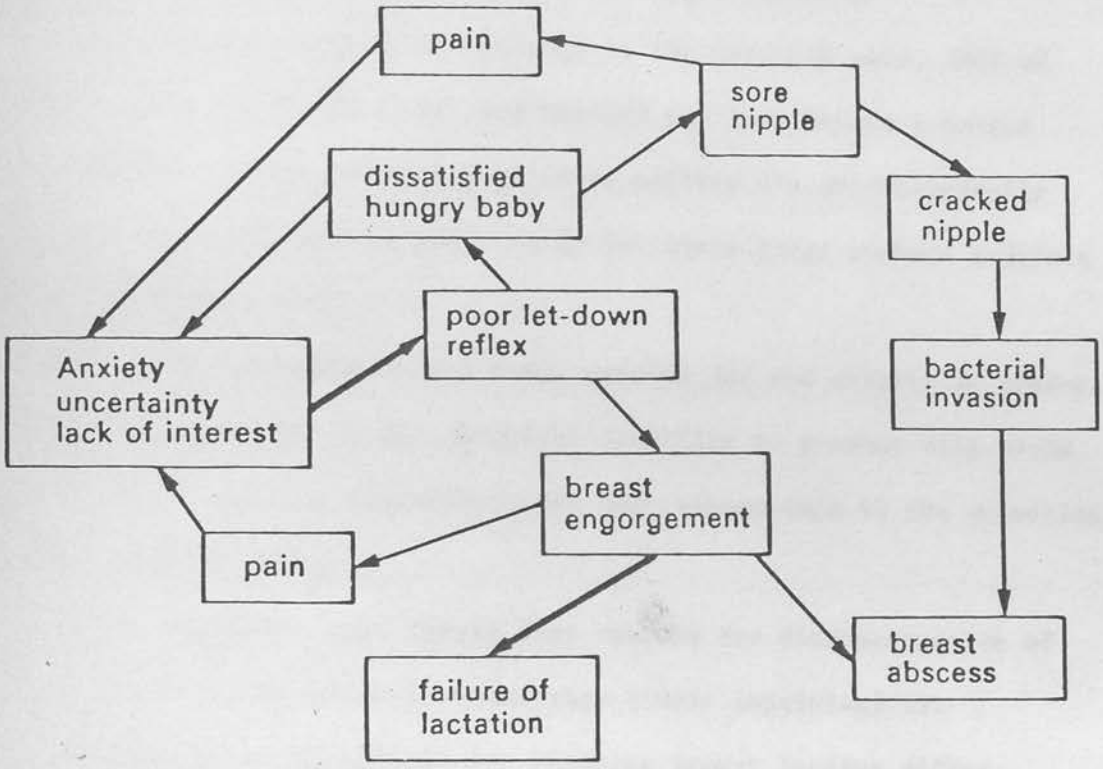

Fig. 4 Factors related to inhibition of the let down reflex and lactation failure (reproduced from Jelliffe & Jelliffe, 1978; originally from Findlay, 1974).

physiology may result in the "vicious circle" of let down failure (Jelliffe & Jelliffe, 1978; Fig.4).

1.2.2.2 Reasons for discontinuation of breast feeding

It is unlikely that large numbers of women failing to breast feed do so because of a purely physiological incapacity to produce enough milk. Two arguments can be advanced in support of this.

1. In societies where breast feeding is the cultural norm, 100% of mothers start to breast feed, and 98-100% continue beyond 6 months (WHO, 1979). It is unlikely that these mothers are physiologically different from mothers in other societies where large numbers complain of "insufficient milk".

2. Selection pressures in the human species for the ability to produce milk will be strong; a physiological inability to produce milk would be one of the genetic characteristics most susceptible to the selection process (Short, 1976).

It is therefore more likely that reasons for discontinuation of breast feeding are cultural rather than simply physiological.

Reasons given by mothers for stopping breast feeding differ according to the length of time for which they have breast fed.

(i) Initiation of Lactation

In the early establishment of lactation, physical factors play a major role and adverse physical factors may cause failure. These factors include flat and sore nipples, (Gunther, 1945; Martin, 1978; Newton, 1952; Waller, 1946), painful engorgement of the breast (Gunther, 1973; Waller, 1946; West & McNeilly, 1979), and difficulty getting the baby to take the breast (Fisher, 1981; West, 1980).

Martin (1978) found that 31% of mothers in England and Wales discontinued breast feeding within the first 2 weeks. Problems with breast feeding in the first week were mainly physical difficulties such as getting the baby to take the breast (31%), painful engorgement of the breast (60%), painful stiches, making feeding difficult (21%) and sore nipples (41%).

(ii) Maintenance of Lactation

Problems reported by women in the later weeks of breast feeding are mainly complaints of the baby crying due to colic or wind, and the feeling of "insufficient milk" due to the baby appearing hungry. Sixty-one percent of those mothers who stopped by 6 weeks complained of "insufficient milk" (Martin, 1978).

Sjolin et al (1977) in a retrospective study of 298 mothers in Uppsala, Sweden, report that by 12 weeks postpartum, only 19% of mothers were still breast feeding at all, and only 12% of these mothers were fully breast feeding. The most common reason for discontinuing lactation was that the "milk dried up".

Of 108 mothers in Dundee, (Salariya et al, 1980), 73% of mothers who stopped breast feeding before 12 weeks blamed a "poor milk supply" and a further 13% blamed an "irritable baby". West (1980), studying 533 mothers and babies in Edinburgh, found that of the 41% who discontinued lactation before 12 weeks, 72% complained of an inadequate milk supply, "unsettled baby" or "frequent feeding". The large and comprehensive survey by Newson & Newson (1974) in Nottingham in the early 1960's showed that although 83% of women were breast feeding at 4 days after birth, only 60% were still feeding at 2 weeks. Seventy-two of the breast feeding failures were attributed to the "unsuitable quality" of their milk.

Hytten et al (1958) found that excessive crying and inadequate lactation were the major factors leading to a cessation of lactation in 106 primiparous women.

Figures from the WHO Collaborative Study (1979) show that the major reason now given by mothers in developing countries for cessation of lactation is the feeling of "insufficient milk". The extent to which this is a response to Western practices and to the availability of an alternative source of infant food must be questioned.

(iii) The mother's perspective on problems

It is recognised that many factors affect lactating women, and the duration of their breast feeding. The reasons for discontinuation given in the studies described here often fail to acknowledge the variety of influences which may be involved;

"Unfortunately, research in this area is limited and usually fails to go beyond simply asking mothers why they wean their infants"
Greiner (1979)

Few studies have examined in detail the progress of breast feeding from the mother's perspective. Most studies report a single, causal reason for stopping breast feeding and do not investigate factors which affect mother and child before stopping. Women, when asked why they stopped breast feeding, may express the answer in "acceptable" terms such as not enough milk, or the baby being unsettled. The intricacies of the factors which affect women, their feelings and therefore their babies and their own behaviour, is lost in research which looks for a single causal factor. Both Oakley (1980) and Graham & McKee (1980) have examined factors which affect women during pregnancy, labour and early motherhood by interviewing women regarding their own experiences. Although not specifically investigating breast feeding, both studies discuss the importance of the multifactorial nature of the problems which mothers experience.

Graham & McKee (1980) describe the importance of the mother's health, and the physical exhaustion which many new mothers experience. They recommend that health workers should develop an understanding of the emotional stresses of early motherhood, and how these interrelate with postnatal physical health difficulties. Breast feeding is implicated in this emotional and physical interlink, and Graham & McKee conclude that attention needs to be focussed in detail on the interrelating factors which affect women both in hospital and at home, and result in cessation of breast feeding.

Bergman & Feinberg (1981) asked the breast feeding women in their study about problems they encountered postpartum; 22 "problems" were defined, the most prevalent being physical tiredness, stress and anxiety, feeding the baby, excessive crying by the baby, and difficulty with older children. These findings illustrate the variety of physical and emotional stress factors which women encounter, and it is clear that a single reason for cessation of breast feeding is insufficient.

The following section examines some of the variety of factors which may be involved in success of breast feeding.

1.2.2.3 Other factors affecting the success of breast feeding

Many behavioural and environmental factors have been shown to be important in the success of breast feeding. These include previous breast feeding experience (Martin, 1978; West, 1980), age of the mother (Anonymous, 1969), cultural practices (Goel et al, 1978), embarassment (Bentovim, 1976; Newton & Newton, 1967), fathers' attitudes (Howie et al, 1982), the timing of the decision to breast feed (Thomson, 1979), sex of the baby (Harfouche, 1965) and practical resources available to the mother (Korchounova, 1979).

Practices during the the initiation of breast feeding and the social class of the parents appear to be the two factors with the most profound effect, and these two factors are examined in detail.

(i) Practices during the initiation of breast feeding

There is some evidence to suggest that length of labour may affect the duration of breast feeding (Jackson et al, 1956). However, these effects may be confused by the effects of obstetric medication on both mother and infant in the first 10 days (Bernal & Richards, 1970; Brazelton, 1961). Bernal & Richards report that more medication and a longer labour affect the success of breast feeding. Drugs given in labour lead to altered interaction between mother and infant in the first 10 days, such as altered sucking patterns and more difficult feeding interactions. There is, however, some dispute as to the relationship of obstetric medication and breast feeding (Rosenblatt et al, 1979).

Bernal & Richards (1970) also suggest that the less successful breast feeding women show different interaction patterns, which include less affectionate touching of their babies and a reduced amount of non-nutritive sucking time in the early days of lactation. These data suggest that the basis for successful breast feeding may be affected by performance in the first few days.

There are several indications that other hospital routines may affect long term success. Mothers having early or immediate contact with their babies appear to be more successful (De Chateau & Winberg , 1978; Salariya et al, 1978). The classic study by Illingworth (1952) showed that "demand" feeding (that is, feeding when the baby wakes and cries) in the early days led not only to more successful breast feeding, but also to fewer nipple problems and less engorgement. This study has since received support from many others (for example, Salariya et al, 1978). It has also been shown (Jackson et al, 1956) that keeping the baby with the mother on a "rooming in" basis not only promotes mother-infant contact, but increases the success of breast feeding.

Hytten (1954) reports that the milk yield at the end of the first week was related to the duration of breast feeding.

There is some evidence that milk yield can be adversely affected by routine supplementary bottles (Gillie, 1976). This remains, however a standard practice in many postnatal wards. It is suggested that duration of breast feeding may be dramatically increased if supplementary feeds are introduced by spoon, rather than by bottle (Ungar, 1949).

Advice given concering the appropriate length of time to suckle the baby at each feed in the early days has tended to be rigid and prescriptive. However, Howie et al (1981a) have shown that milk intake by the baby is not related to the amount of time the baby spends on the breast; babies have a wide individual variation in feed volumes taken with time, and a timed feeding routine at this stage will inevitably lead to stress and possible failure of breast feeding. These conclusions are supported by Lucas et al (1980).It has been noted that

"Hospital routines are often much more geared to the requirements of the institution than to the needs of mother and infant" (Richards, 1975).

One report on postnatal care (Filshie et al, 1980), while acknowledging the practical difficulties of implementing such practices as flexible feeding regimes and early contact, recommends that the needs of the mothers and babies must be the priority, not the hospital routine. Conflicting advice is not inevitable, even within a large system such as a hospital ward;

"Good, ongoing communication, both verbal and written, will drastically reduce conflicting advice, especially when carried on within a sensible, well-formulated ward policy" (Thomson, 1979).

There are some societies where the practices of early frequent feeding, continuous contact and no supplementary feeds do not occur, and yet lactation is successfully established (Raphael, 1976). Some developing societies have traditions of separation of mother and infant, where the infant is given supplements for the first few days, and where colostrum is regarded as harmful to the infant (Potts, M., personal communication);

"The practice of preventing the newborn infant from taking colostrum and the giving of sugar instead...has been prevalent since the dawn of civilisation (Wickes, 1953).

There must be other factors implicated, and mechanisms which affect mothers in traditional societies other than practices in the period of initiation, to ensure successful breast feeding. There appears to be some justification for the suggestion that factors such as flexible feeding and early contact may be an effective compensation for the unnatural environment experienced by mothers and babies in modern hospital delivery units (Winikoff & Baer, 1980).

(ii) Social class and the duration of breast feeding

The major variable in long term success in breast feeding appears to be the social class of the parents. Other variables appear to be related to social class. This discussion concentrates on the role of social class in the maintenance of successful breast feeding.

Many studies show the relationship of social class (which is usually defined by occupation) both with the decision to breast feed and with the duration of breast feeding (Bacon & Wylie, 1976; Houston & Howie, 1981(b); Hytten et al, 1958; Jackson et al, 1956; Newson & Newson, 1974; Sjolin et al, 1977). In Western society, the "professional" classes more often choose to breast feed

and are more successful than the lower social class groups. Paradoxically, this trend is reversed in developing societies (WHO, 1979). The economically advantaged in the developing countries are turning towards bottle feeding and the early discontinuation of breast feeding.

It is possible to speculate on the factors which are at work within Western society which lead to this effect. There are no studies which have successfully separated the possible factors, such as sub-cultural norms, increased privacy, acceptance of sexuality, access to reading material and peer group support.

Richards (1975) outlined some mechanisms which he considers to be important. He suggests that:-

1. Middle class mothers may be less likely to interpret crying as a personal failure on their part to produce enough milk for their baby.
2. Middle class mothers may be more highly motivated to breast feed because increased reading makes them more aware of the benefits of breast feeding.
3. Middle class mothers may be more willing to adapt their routines and schedules to the baby's demands. (Perhaps it is fair to add that in many cases they are also more <u>able</u> to adapt due to fewer practical restrictions).
4. Middle class mothers are better informed with more realistic expectations of baby's demands.
5. Middle class mothers are better able to find and use resources; and then to adapt advice given to their own situation.

These points, although very generalised and in some cases, apparently based on preconceptions of social class differences, give some insight into the complexity of the factors at work within social

class. It should perhaps be noted that almost all points may be explained by increased education.

Newton (1973), describing the interrelationships between sexual responsiveness, birth and breast feeding, gives some indication of the sexual characteristics associated with breast feeding and perhaps helps to explain cultural and social class differences. An acceptance of her own sexuality is necessary to prevent feelings of guilt in the woman if she experiences any sexual feelings associated with breast feeding. This work has been supported by Sears et al (1957) and Masters & Johnson (1966) who report that breast feeding mothers have a higher level of sexual interest and a greater tolerance of sexual play in their own children. This awareness of the sexual aspect of breast feeding, potentially leading to guilt, may perhaps partly explain the otherwise disheartening statement by Hytten et al (1958) that none of the mothers who breast fed for 3 months or more admitted to finding it physically or emotionally pleasurable. The conflicting demands experienced by the breast feeding woman may result in her not knowing how to feel about her breasts and breast feeding;

> "A woman lactates. She understands that she should be proud to fulfil her destiny in this way. She is told that this is the best way to nourish her baby, no milk is comparable to human milk. She is taught to do it discreetly though, so as not to offend passers-by when acting out her proud destiny. She gets to understand that after having fulfilled her destiny, the altered shape of her breasts may render her less sexually attractive".
>
> (Helsing, 1979)

1.2.3 INFORMATION, SUPPORT AND THE SUCCESS OF BREAST FEEDING

The availability of information and support is important in the success of breast feeding. One contribution to the success of the breast feeding mother can come from written information in books and magazines. There are now many handbooks of child care and breast feeding which offer information and advice (Leach, 1974; Stanway & Stanway, 1978; The Book of the Child, 1980).

Books on health aspects which give information on basic physiology can be useful; for example, Phillips & Rakusen (1979). This type of information-giving on its own has, however, two major drawbacks. It tends to be limited to the more literate mothers and the advice given can never be geared to the individual.

Support can be given on its own in our society by the father or any caring individual in frequent contact with the mother (Jennings & Davies, 1980). However, it is suggested that a combination of information and support are necessary for successful breast feeding. In traditional societies, both information and support are given by the "doula", an experienced woman who is given the task of helping new mothers (Raphael, 1976).

It is possible to increase rates of breast feeding in Western society by increasing both the level of information and experienced support. Sloper et al (1975) demonstrated that a single seminar designed to increase the knowledge and enthusiasm of the ward staff, resulted in an increase in the number of mothers breast feeding on discharge from hospital from 14% to 37%. A similar seminar aimed at health visitors and community nurses was followed by mothers feeding for a longer time (43% at 5 months, compared with 23%) and introducing mixed feeds at a later time (17% at 2 months compared with 64%) (Sloper et al, 1977). The provision of postnatal care by health service staff in Britain is reviewed in Chapter 2.

A retrospective questionnaire survey by Ladas (1970) concludes; "information and support combined related more highly to outcome than either information or support alone". Practical support on a national level in the form of increased maternity leave, facilities for child care, and flexibility in work routines has been recommended (Helsing, E., personal communication). These measures, which usually involve some change in legal and statutory provisions for pregnant and postnatal women, vary at present from country to country. Some countries have adopted positive and aggressive policies to promote breast feeding. New Guinea, for example, has restricted the use of powdered milk by making it available only on prescription (Biddulph, J. personal communication). Chile has drawn up a Sanitary Code which states:-

"Maternal milk belongs exclusively to the child; therefore mothers are obliged to nurse their children unless instructed otherwise by medical staff" (Cortes, 1979).

Other countries, less aggressive in their policies, are introducing facilities for child care and maternity leave. Sweden is particularly active in this method of promotion of breast feeding (Hofvander et al, 1979). Many countries have now adopted the WHO Code of Practice which restricts the promotion and sale of powdered milk (WHO, 1980). It remains to be seen how effective these measures are in promoting breast feeding.

1.2.4 THE HISTORICAL PERSPECTIVE ON BREAST FEEDING

The early cessation of breast feeding and the feeling of "insufficient milk" are not recent developments. Traditional remedies and alternative methods of feeding infants are recorded over the last few thousand years.

Wet nursing is an ancient practice which still continues in some cultures (Greiner, 1977). Soranus, in the 1st-2nd century, recommended

that children should not be nursed by their own mothers;

"From the second day on...one should feed with milk from somebody well able to serve as a wet nurse, as for twenty days the maternal milk is in most cases unwholesome, being thick, too caseous, and therefore hard to digest, raw, and not prepared to perfection".

Characteristics and attributes of wet nurses have been described at length by many authors;

"The first and essential point in a wet nurse is, doubtless, that her milk be good; to which end it is necessary that she be healthy and young; not of weak nerves; nor disposed to menstruate while she gives suck: and that her bowels be rather costive than otherwise". (Underwood, 1835).

Other alternatives to breast feeding include the feeding of various substances such as "pap" or "panada", and a large selection of ancient elaborate feeding vessels may be seen in the British Museum, London (Fildes, 1981).

Anxiety concerning the adequacy of the milk supply also appears to be an ancient problem. Many recipes for "galactogogues" exist, including substances to eat and drink, ointments to be applied, and charms to be worn (Jelliffe & Jelliffe, 1978). Phaire (1592) suggests;

"the powder of earthwormes dryed and dronken in the broth of a neates tongue" to increase the milk.

Recipes for increasing the milk supply can still be found in modern books of herbal medicine, and fennel is strongly recommended by one French author "pour augmenter la secretion du lait" (Veissid, 1973).

Some traditional physicians appear to have been very aware of practices which have recently re-emerged only after extensive research; practices such as flexible feeding and reduced supplementary feeds.

Smith wrote in 1792:-

"I am entirely against an infant's receiving any nourishment until it can be put to the breast".

He also wrote:-

"Believe this solemn truth - almost every woman is capable of supporting her babe; and great will prove the advantages, both to herself and her infant".

It can therefore be seen that anxiety concerning the adequacy of the milk supply is not restricted to any particular culture.

CHAPTER 2

A REVIEW OF THE PROVISION OF POSTNATAL CARE BY THE HEALTH SERVICE IN BRITAIN

"Health service staff must play a critical role in the initiation, establishment and maintenance of breast feeding and should ensure that the mother has a source of sustained support for as long as breast feeding continues, and thus health workers should be well informed and provide consistent information"

WHO 1979 (p.13)

In Chapter 1, the problems of the breast feeding mother and the need for support both in hospital and at home are discussed. It is suggested that increased knowledge and enthusiasm on the part of staff caring for the new mother can increase the success of breast feeding. In this chapter, the structure of the health service care for postnatal women in Britain is considered, with specific discussion of the role of the midwife, the health visitor, and the child health clinic in the care of mothers and infants;

"attention needs to be focused on the structure and delivery of the service" (Graham & McKee, 1980).

2.1 THE MIDWIFE

In Britain today, well over 90% of women have their babies in hospital (Court, 1976). Their immediate postnatal care is therefore the responsibility of the hospital midwife, with this care normally being continued at home by the community midwife until at least the 10th postpartum day (Central Midwives Board, 1968).

The immediate postpartum days are important in the successful initiation of breast feeding, and hospital routines may affect the longterm outcome (1.2.2.3). Raphael (1982) has discussed the need in all societies for a "doula", an experienced woman who teaches, and gives practical and emotional support for breast feeding, particularly in the early days. Without this "doula", breast feeding often stops prematurely. The role of "doula" in Western society is part of the responsibility of the midwife;

"The midwife is in an ideal position to assume a primary supportive role for new mothers".
Raphael (1982)

Because many of the problems which occur in the first few days are physical problems, such as sore nipples and engorgement (1.2.2.2), much of the teaching and care required is of a practical nature. Gunther (1945) states that it is possible to prevent nipple pain and damage altogether by teaching of accurate technique. This view is supported by Fisher (1981) who holds that the role of the midwife in the initiation of breast feeding is fundamental to preventing problems and promoting success. Such problems as cracked and sore nipples, and engorgement, may be helped by implementation of hospital routines such as demand feeding (Illingworth, 1952), but their prevention and treatment must also be carried out on an individual basis.

It has been noted that midwives are not always aware of the central place of infant feeding in postnatal care. In a study which questioned both mothers and midwives about the important factors in the postnatal period, mothers stated that their early postpartum days were dominated by their preoccupation with infant feeding (Laryea, 1980).

Their success with feeding was seen as a measure of their own performance as mothers. Midwives, by contrast, reported in the same study that the health of the mother was the most important aspect of postnatal care, with infant feeding only third in order of priority. It appears that midwives may not be totally aware of the importance of their role in support of breast feeding.

The organisation of postnatal ward staffing is not always conducive to the development of a trusting relationship between mother and midwife. The importance of conflicting advice at this stage has been described in 1.2.2.3. This conflicting advice may result from the continued "task-oriented" approach to patient-care in postnatal nursing. This approach, where one nurse is responsible for a series of particular tasks, such as checking blood pressures or taking temperatures, results in each mother being cared for by a series of different nurses, each responsible for a small part of her care. An alternative approach is the implementation of individual nursing care schemes, involving a coherent nursing care plan for each patient and with one nurse being responsible for the total care of a group of patients. This later approach, termed "the nursing process" has been less enthusiastically received in midwifery than in general nursing units (Darcy, 1980; Henderson, 1978; SNNMCC, 1981).

2.2 THE HEALTH VISITOR

Care of the postnatal mother becomes the responsibility of the health visitor after the midwife stops visiting. This normally occurs around the 10th postpartum day. Thereafter, care of the health of the family is her responsibility, as laid down by the National Health Service Act, 1946 and the National Health Service (Scotland) Act, 1947:-

"It shall be the duty of every local authority to make provision in their area for the visiting of persons in their homes by visitors, to be called "health visitors", for the purpose of giving advice as to the care of young children, persons suffering from illness and expectant or nursing mothers, and as to the measures necessary to promote health and to prevent the spread of infection".
(Para 24 (1))

The health visitor therefore is the professional most involved in the long term support of breast feeding.

In order to understand the role of the health visitor more fully, the development of her role and her present function will now be considered.

2.2.1 Development of health visiting

Health visiting started around 1862 as an extension of the Sanitary Reform Societies (Wilkie, 1979). The main function of the service at that time was to educate working class mothers on principles of hygiene and child care; this developed gradually into a more exclusive involvement with maternity and child welfare. By 1902, when their qualification and training were first organised, health visitors were associated more with the preventive aspects of maternal and child care than with any other field (O'Connell, 1977).

The first signs of a challenge to their priorities of care became apparent immediately after the 1914-18 war, when their responsibility for child care, sick nursing, and preventive and educational work increased. Following the introduction of the National Health Service in 1948, the health visitors' range of functions broadened even further. As laid down in the NHS Act, 1946, and the NHS (Scotland) Act, 1947, the health visitor was now responsible for care and health

education for the whole family; as a consequence of this, care of the elderly and the handicapped was added to their existing commitment to maternal and child care. The Jameson Report (1956) stressed the preventive aspect of health visiting; but it also maintained the broad-based role of the health visitor by underlining her responsibility for the full age range of the population. The problem of separating the preventive aspect of care from provision of care itself is highlighted by one of the "training objectives" laid down by the Council for the Education and Training of Health Visitors which states that the health visitor is responsible for

"provision of care; this would include support during periods of stress, and advice and guidance in cases of illness as well as in the care and management of children".

O'Connell, 1977

The health visitor may therefore find some conflict in deciding priorities of care. Although her commitment to maternal and child care remains a central responsibility (Wiseman, 1982), other areas of need make important demands on her time.

2.2.2 Present training and practice of the health visitor

The training of the health visitor is now a statutory qualification, and is controlled by the Council for the Education and Training of Health Visitors (Wilkie, 1979). The health visitor must be a registered nurse; she may or may not be a midwife, but must have training in obstetrics. Training is a one-year course in aspects of preventive care, child development, psychology and sociology. She is trained in health education, identification and prevention of a wide range of health and social problems.

Present health visiting practice in the area of postnatal care is based on two points of contact with mothers; routine home visiting and regular child welfare clinics. The provision of care on a routine basis both at home and in the clinic should result in the health visitor being in the ideal situation to identify and forestall problems associated with breast feeding. She is the only health worker with regular access to normal families and, unlike visits by the social worker, the mother need not associate visits by the health visitor with any guilt (O'Connell, 1977).

"The home visit is the unique component of health visiting" (Orr, 1980).

2.2.3 Problems and proposed solutions in the provision of postnatal care by health visitors Three government reports, Black, 1980, "Inequalities in Health", Court (1976) "Fit for the Future" and Sheldon (1967) "Child Welfare Centres", discuss problems in the provision of care by health visitors.

(a) Problems in home visiting

In the Court Report (1976) it is shown that health visitors are now seeing fewer children than in the past, in spite of their commitment to child care. This is attributed mainly to the decline in home visiting and to the under-use of the child health clinics. Increasing responsibility for adults and the elderly has reduced the time available for home visits. Another source of difficulty has arisen since the start of the trend towards "GP attached" health visitors. Previously, health visitors were responsible for a geographical area, and came to know the families through their work in the schools and the local clinic. The recent development towards "GP attachment" in which one health visitor is responsible for the care of

the patients of one particular GP or groups of GP's has, the Court Report argues, caused more problems than it has solved. This system of attachment is condemned as causing reduced contact with young mothers. No longer being responsible for one geographical area, the resulting decrease in "territorial" knowledge makes it more difficult for the health visitor to locate new mothers, and mothers are no longer sure of seeing their own health visitor at the clinic.

In the Black Report (1980) the level of care provided in relation to the need for care is investigated. The marked inequalities in health across occupational groupings appears to be related to the different patterns of use of health services, this differential being especially apparent in preventive services such as antenatal care and health visiting. Although families in the lower occupational groupings are more at risk of many manifestations of ill health, particularly among young children, these families use the services provided less than families in the higher groupings. Despite this, there appears to be no variation between women in different social class groups, in the number of home visits that they receive from health visitors, suggesting that there is no compensatory positive discrimination for mothers most at risk. This lack of bias towards those most at risk is supported by Court (1976); there is no evidence that health visitors compensate for non-attendance at the clinic by visiting the non-attenders at home.

(b) Problems with child health clinics

Child health clinics, or "baby clinics" as they are known to mothers and staff, are run on a regular basis by the health visitor. A general practitioner or a paediatrician may also be available, but the main responsibility for the organisation of the clinic service is that of the health visitor. Developmental checks and immunisations are

carried out, and general advice is given at these clinics. "Health visiting in the 80's", is a statement by the Health Visitor's Association (1981), of its list of priorities of care. In this statement, it is recommended that even under conditions of severe staff shortages, the full quota of child health clinics must be continued. It is therefore seen by the health visitor managers as an important point of contact with mothers. However, mothers may not view the clinics as either helpful or appropriate to their needs. The clinic service is criticised by Black (1980) on the grounds that mothers have to use their own discretion and initiative in attending. The proximity and ease of access to the clinic also affects whether or not women will attend, and these factors combine to maintain the social class differences in use of the health services.

Orr (1979) found some confusion as to the role of the clinic among the women she interviewed; in many cases the clinic was only used to solve a particular problem, rather than as a system of routine preventive care. Questioning mothers about the service which they see as the appropriate source of advice on feeding problems reveals yet more of this confusion. One small study (Barnes & Barnes, 1976) found mothers' preferences fairly evenly divided between the baby clinic, the health visitor at home and the general practitioner. Kirk (1976 a & b) reports that 42% of women in his study turned to the health visitor at home for feeding advice; only 28% asked for advice at the clinic.

The Sheldon Report, "Child Welfare Centres" (1967) is critical of the facilities provided by the clinics and of the service which they

provide. The accommodation is often overcrowded, underheated and dirty, with little provision for private consultation. Such an environment is not conducive either to frequent attendance or to adequate care for the mothers and babies who do attend. Of mothers who do attend the clinic, the majority attend primarily to weigh the baby rather than any other reason (Court, 1976). This preoccupation with the baby's weight on the part of both mothers and staff is criticised by Sheldon (1967):-

"The recording of a child's weight has become to a great extent a ritual, although by itself it is not a valuable criterion of progress. For various reasons, it is liable to error...We recommend that infants should be weighed at their first attendance and at subsequent birthday attendances, although weighing at other times may be requested by the doctor or health visitor".

Although child health cliics have a part to play in the provision of early infant care, there is evidence that

"the people who provide services and the consumers often see things in differences ways"
(Orr, 1978)

(c) Proposed solutions to the problems in the provision of postnatal care by health visitors

Health visitors themselves are aware of the problems described in the previous section. Several small studies by health visitors have given some indication of possible solutions. Proposals include provision of a telephone advice system (Beech, 1981; Metcalfe et al, 1981), the organisation of self-help groups for mothers (Goodwin, 1980) and the prediction of "problem" families accompanied by priority visiting (Hills et al, 1980). It is of interest to note that in all these experimental schemes, infant feeding has been the major problem encountered.

As described in 2.2.3, the Health Visitors' Association recommendations for priorities of care (1981) advocate the continuation of the clinics in areas of stretched resources, while home visits are only to be carried out in response to a "crisis". This recommendation appears to be at odds not only with the government reports on the subject, but also with the wishes of mothers and the views of health visitors themselves;

"we would concentrate home visits to those demonstrated as priority, and not wait for them to call"
(Hills et al, 1980)

Eighty-four percent of mothers (Orr, 1978) would prefer to see the health visitor at home. Black (1980) recommendeds increased home care for those most in need, and Court (1976) concludes;

"we are convinced that home visiting has an indespensible and increasing place in the future child health services".

Other recommendations of the Black Report include the need to make child health clinics more pleasant and more accessible, by, for example, mobile caravans to make the services more available.

A specialised Child Health Service, involving both GP's and health visitors, has been proposed by Court (1976) in an attempt to reduce the widening field of responsibility and need for increasing knowledge among community staff. These proposals have not so far been implemented; health visitors remain proud of their generic function, and are aware of the benefits of caring for the whole family. However, it is suggested that the broad provision of care by the health visitor is no longer possible;

"professional mastery necessitates much narrower and deeper focus on client needs and the objectives of the service" (Orr, 1978).

2.3 AIMS OF THE PROGRAMME OF RESEARCH

It is clear that the factors contributing to the success or failure of breast feeding are many and complex. The programme of research described in this thesis was designed with the objective of defining more clearly those factors which are of particular importance so that appropriate management policies could be developed to help the breast feeding mother.

Chapters 3,4, and 5 examine hospital practices during the initiation of breast feeding, and their relationship with success.

Chapter 6 presents a small experimental study in which additional, structured professional support was offered to breast feeding women at home.

Chapters 7,8 and 9 describe a detailed examination of factors which affect women both in hospital and at home, and of the amount and effectiveness of the professional support which they receive.

The final chapter presents a summary of the main findings which emerged from the research programme. The thesis concludes with some recommendations for the care of breast feeding women, made in the light of these research findings, existing studies and the professional judgement of the researcher.

Definition of "successful breast feeding"

The time of most rapid discontinuation of breast feeding is in the first 12 weeks postpartum(1.2.1.) This research therefore is confined to examination of problems in these vulnerable early weeks, and "success" is defined as either continuation of breast feeding beyond 12 weeks, or until such time as the mother herself wishes to stop within this 12 week period.

CHAPTER 3

STUDY A: THE MEASUREMENT OF MILK INTAKE

3.1 PREFACE

It is suggested in a number of studies that early and frequent suckling in the immediate puerperium promote the long-term continuation of breast feeding (1.2.2.3, especially de Chateau et al, 1977, Salariya et al, 1978). Salariya et al (1978) report that milk "came in" (that is, mothers felt their breasts expand and secretion change from colostrum to milk) more quickly in mothers who first suckled within one hour of delivery on a flexible regime, when compared with mothers who delayed first suckling for more than six hours and fed by a rigid regime. Their study provided some evidence that early suckling promotes good milk flow and a more successful outcome. There were, however, no objective measures of milk transfer to substantiate the hypothesis.

In 1954, Hytten measured milk yield on day 7 of the puerperium and found that women with the greatest output of milk tended to continue to breast feed for longer than women with smaller output. The objective of the study reported in Chapter 4, "Early milk transfer and the duration of breast feeding", was to extend the observations of Hytten and to examine the possibility that mothers with a well established milk flow by day 3 of the puerperium were those who would continue to breast feed successfully. If this hypothesis were shown to be well-founded, it would suggest that early management policies would indeed be of critical importance in breast feeding success.

In order to perform this study it was necessary to use a reliable, yet minimally invasive method of measuring milk intake. This chapter describes the measure used in the study in Chapter 4, and assesses the accuracy of the method.

3.1.1 INTRODUCTION TO STUDY A

The measurement of milk intake by the breast fed infant is a difficult procedure, especially during the early postpartum days. Two particular problems must be overcome. Firstly, the procedure itself should intrude as little as possible into the process of breast feeding, and secondly the method of measurement should be accurate.

"Test weighing" of the infant before and after each feed is the traditional method of assessing feed volume, but the mother may feel this procedure to be threatening, especially if it is being used to assess her performance (Kitzinger, 1979). It is likely that test weighing itself influences normal milk release by inhibiting the "let down" reflex (McNeilly, 1977; Newton & Newton, 1950).

Two other methods of measurement of breast milk intake have been reported, but were not considered appropriate for this research. Coward et al (1979) describe a technique involving intake of deuterium oxide by either the baby or the mother, followed by assay of salivary samples collected from the baby. This technique, however accurate, may be regarded by mothers and by some investigators (Baum & Dobbing, 1979) as invasive and can intrude equally as much as test weighing on breast feeding, especially if the baby objects to the collection of salivary samples.

The other method involves emptying of the breast by a breast pump or other artificial means of breast expression (Hytten 1954). This technique, however, does not measure actual milk intake by the infant, but gives a measure of the capacity of the breast to produce milk. Furthermore, the very act of emptying the breast may influence milk yield so that this method was not chosen for this research.

Test weighing of the infant remains the least invasive form of measurement. The objective of the study described in this chapter, "The measurement of milk intake", was to see whether minimal intrusion by only one, or at the most two, test weighs in 24 hours would be sufficient to give an accurate assessment of 24 hour feed volumes. This chapter describes the particular test weigh procedure used for the study reported in Chapter 4 and assesses the accuracy of using a single feed in each 24 hour period as a measure of milk transfer. The problem of accuracy of recording was alleviated by the use of an electronic balance as described in 3.2 below.

3.2 PATIENTS AND METHODS

(i) Patients

Patients were all mothers delivered in the Simpson Memorial Maternity Pavilion, Edinburgh. Eighteen mothers were recruited. Nine women were recruited antenatally so that test weighs could start immediately; a further nine women were recruited postnatally.

All patients were women who intended to breast feed, and all babies were of normal birthweight (>2500 g) and gestation (38 weeks+). Mothers who were recruited antenatally carried out test weigh measurements at every feed throughout their stay in hospital (range 4-9 days). Mothers who were recruited postnatally carried out test weigh measurements at every feed over either a 24 hour or a 48 hour period, ranging from Day 1 - Day 5.

Two babies were transferred to the Special Care Nursery for treatment of hyperbilirubinaemia; test weighs were continued in one of these babies.

Clinical characteristics of mothers and babies are shown in Table 1.

TABLE 1 CLINICAL CHARACTERISTICS OF MOTHERS PARTICIPATING IN STUDY A (n = 18)

MATERNAL AGE (YEARS) MEAN ± SD RANGE	PARITY	TYPE OF DELIVERY	BABY'S BIRTHWEIGHT (kg) MEAN ± SD	SEX OF BABY
27.4 ± 3.9 21-33	10 PRIM 8 PARA	16 SVD 2 FORCEPS	3.47 ± 0.43	10 BOYS 8 GIRLS

(ii) Test Weighing

In order to achieve the maximum accuracy possible, test weigh measurements were carried out using a Mettler integrated electronic balance (Gallenkamp & Co. Ltd., Christopher Street, London) which gave readings which were reproducible to within 2 g. This balance achieves this accuracy by giving a reading integrated over 2 or 4 second periods and maintains accurate weighing even if the baby moves vigourously. A digital read-out facilitates the accuracy of the measurement (Fig.5(a)). Minimal disturbance is caused to the baby since the baby's cot is placed on the scales (Fig. 5(b)) with the baby fully clothed and undisturbed. The initial pre-feed weight is then measured, and the baby lifted and breast fed. The post-feed weight is recorded by returning the baby to the cot on the scales after feeding. Mothers carried out the test weigh procedure themselves, following initial instruction. They recorded the test weigh measurements and the time of the feed so that there was minimal involvement of the nursing staff. Random checks on the accuracy of the mother's test weigh measurements were carried out by the researcher.

(iii) Information recorded

Mothers measured the milk intake of the baby at each feed throughout the day for the duration of the study period. This information was recorded in 24 hour periods, Day 1 corresponding to the first 24 hours postpartum.

A total of 63 completed days of measurement ranging from Day 1 - Day 9 were recorded. Intake at 366 breast feeds was measured.

(iv) Calculation of estimated milk intake

Two estimated milk intake totals were calculated and compared with the actual total intakes. One estimated total was based on intake at one feed, and the other was based on intake over two consecutive feeds.

Fig. 5(a) STUDY A: Detail of Mettler integrated electronic balance showing digital read out.

Fig. 5(b) STUDY A: Mettler integrated electronic balance showing baby undisturbed during weighing procedure.

These estimated totals were calculated by:-

A. 1 feed; the measured intake of the feed nearest to the middle of the 24 hour period was multiplied by the number of feeds given in the relevant 24 hour period.

B. 2 feeds;the mean intake at 2 consecutive feeds nearest to the middle of the 24 hour period was multiplied by the number of feeds given in the relevant 24 hour period.

The two estimated totals were then compared with the measured total intakes. Methods of comparison included calculation of the correlation coefficient of the estimated against measured intakes, and calculation of percentage error of each estimated intake.

3.3 RESULTS

(i) Number of feeds per day and mean milk intake (Fig. 6)

The number of feeds increased from a mean (± S.E.) of 4.6 ± 0.47 on day 1 to 6.8± 0.32 on day 3, but there was no significant increase thereafter (Figure 5).

The mean (± S.E.) milk intake per feed was 7.4 g± 3.5 and 13.8 g ± 4.3 during the first two 24 hour periods respectively but increased sharply to 38 g ± 6 on day 3 (48-72 hours) (Figure 5). After a further increase to 58 g± 7.8 on day 4 (72-96 hours), no further significant increase was found on days 5 or 6.

(ii) Comparison of 1 feed and 2 feed estimated intakes with measured 24 hour milk intake (Figs. 7(a) and (b)).

The measured milk intake ranged from 0 - 1280 g in 24 hours. The relationship of the measured milk intake to the 1 feed estimated intake is shown in Figure 7(a) and to the 2 feed estimated intake in Figure 7(b).

Analysis of regression between measured and estimated intakes gave correlation coefficients of 0.896 (y=0.56 + 98) on the basis of 1 feed, and 0.948 (y=0.77 + 59) on the basis of 2 feeds.

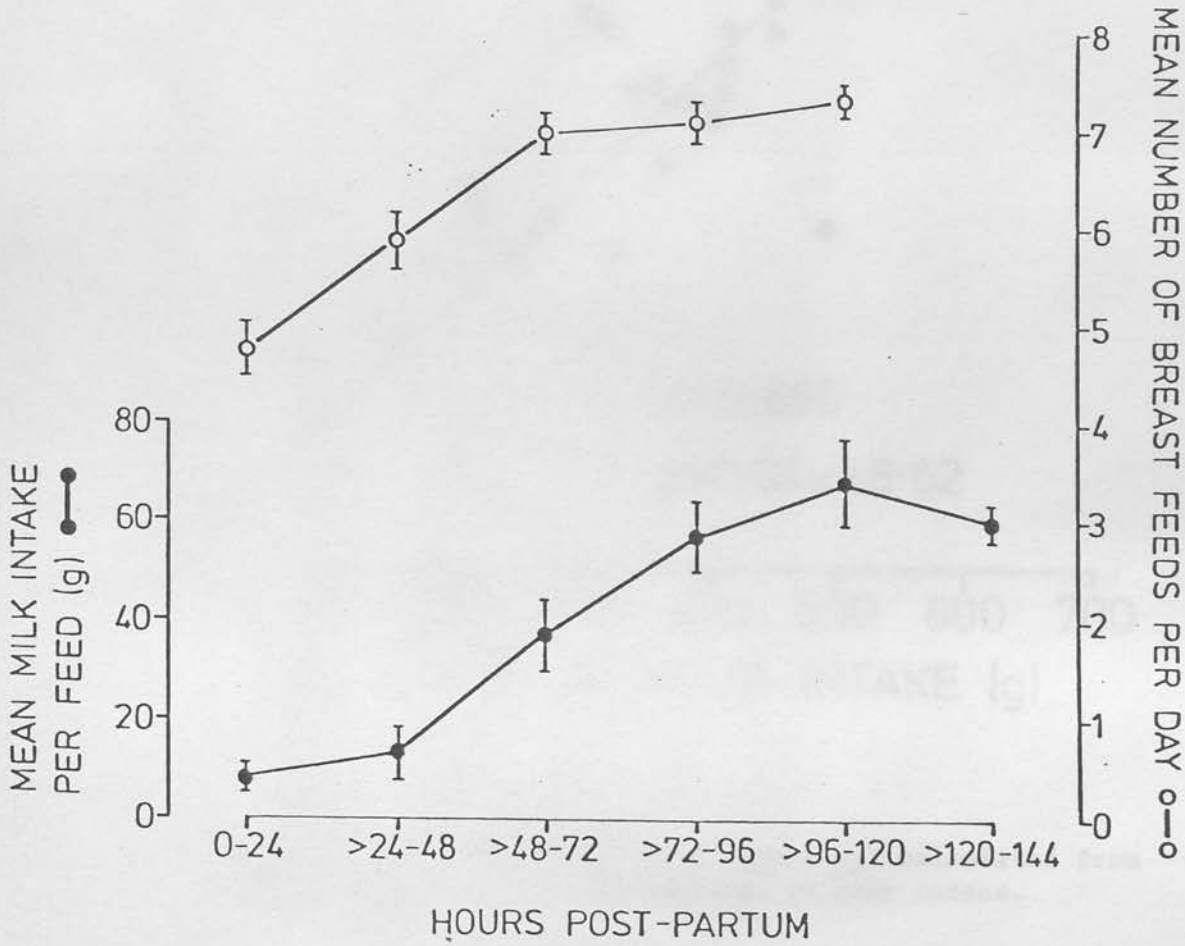

Fig. 6 Study A: Mean (± S.E.) milk intake per feed (g), and number of breast feeds per day in the first 6 days for mothers in Study A (n = 18).

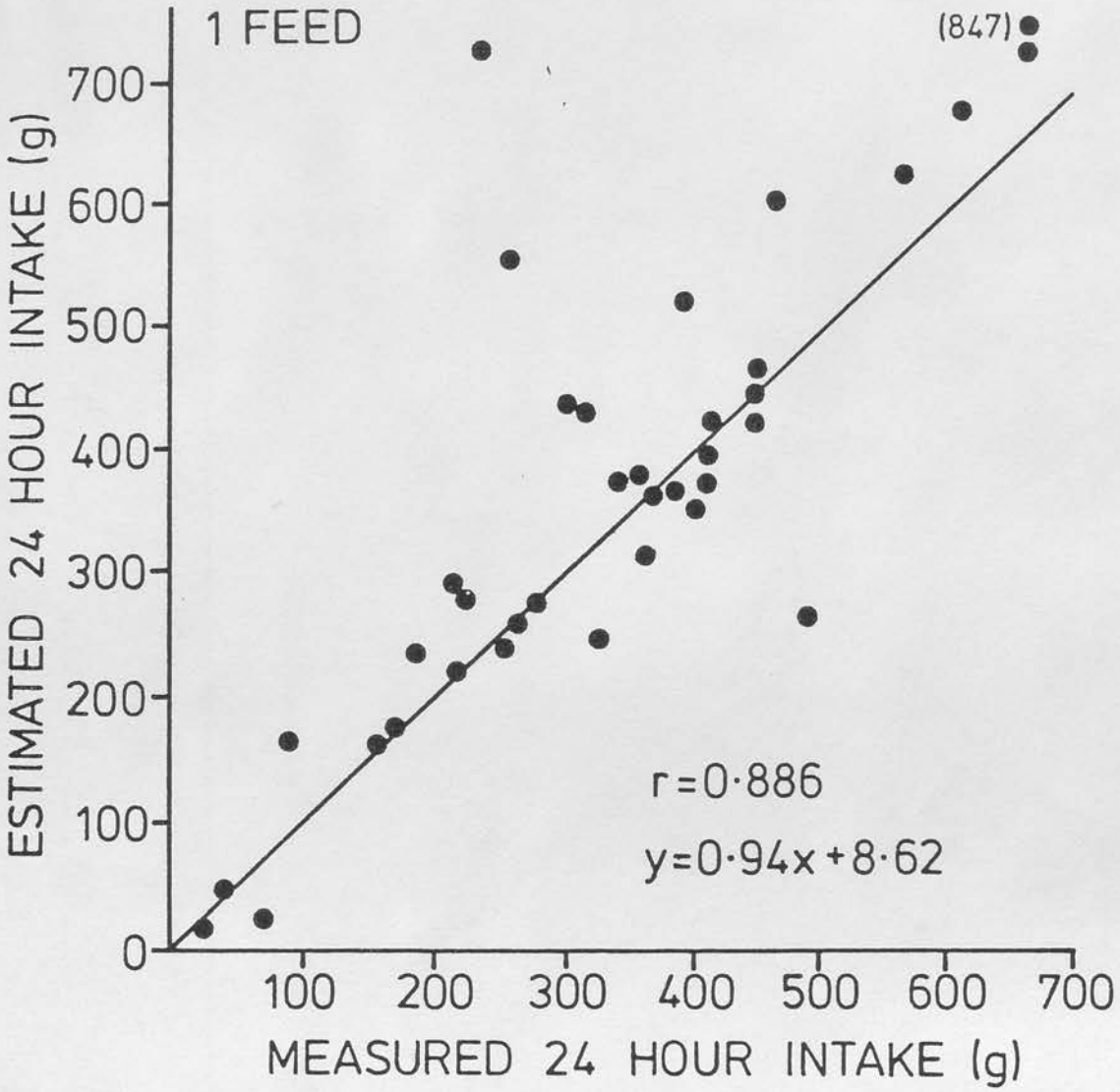

Fig.7 (a) Study A: Estimated 24 hour milk intake (g) calculated from 1 feed, correlated with the measured 24 hour intake.

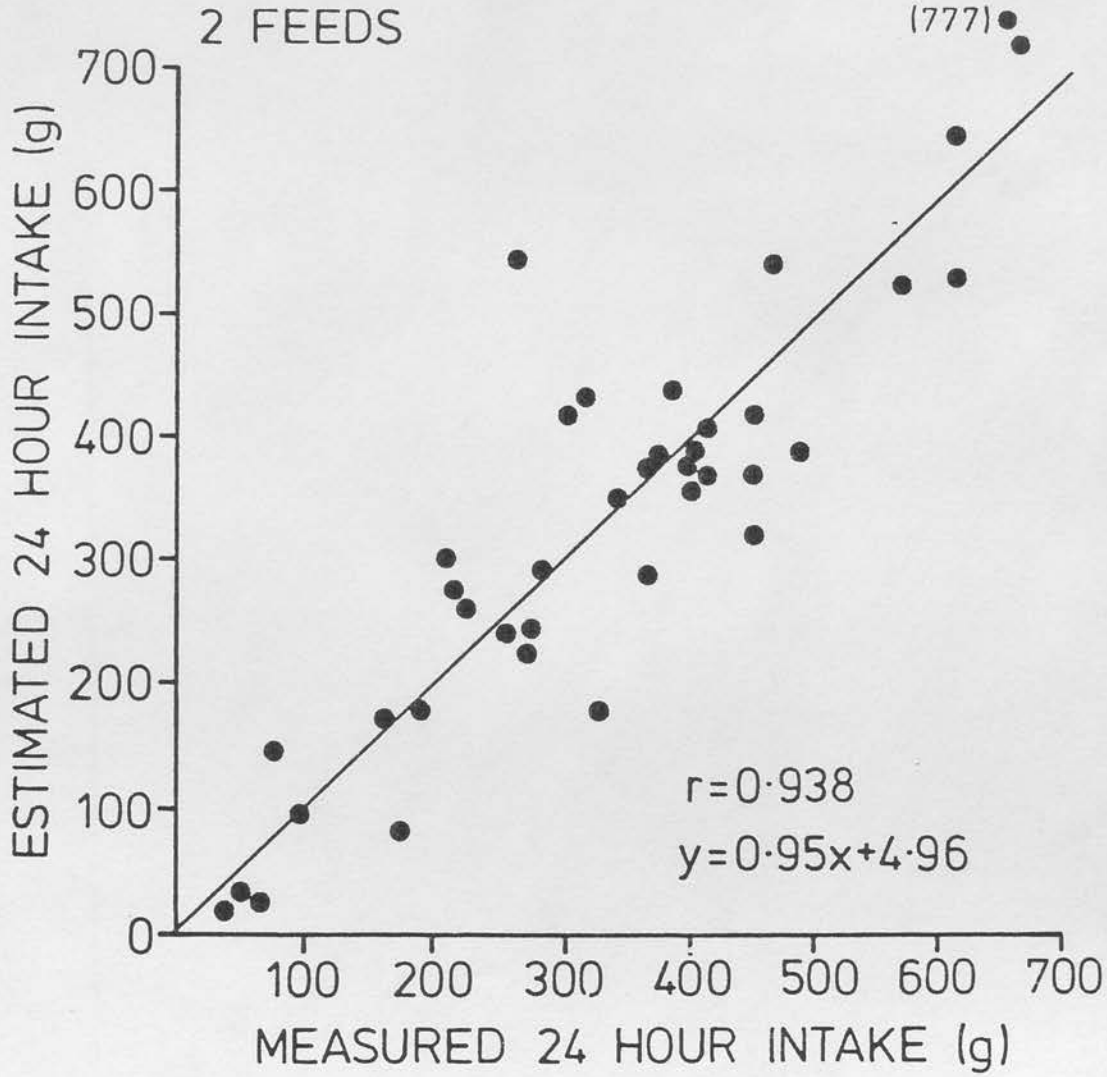

Fig. 7(b) Study A: Estimated 24 hour milk intake (g) calculated from 2 feeds, correlated with the measured 24 hour intake.

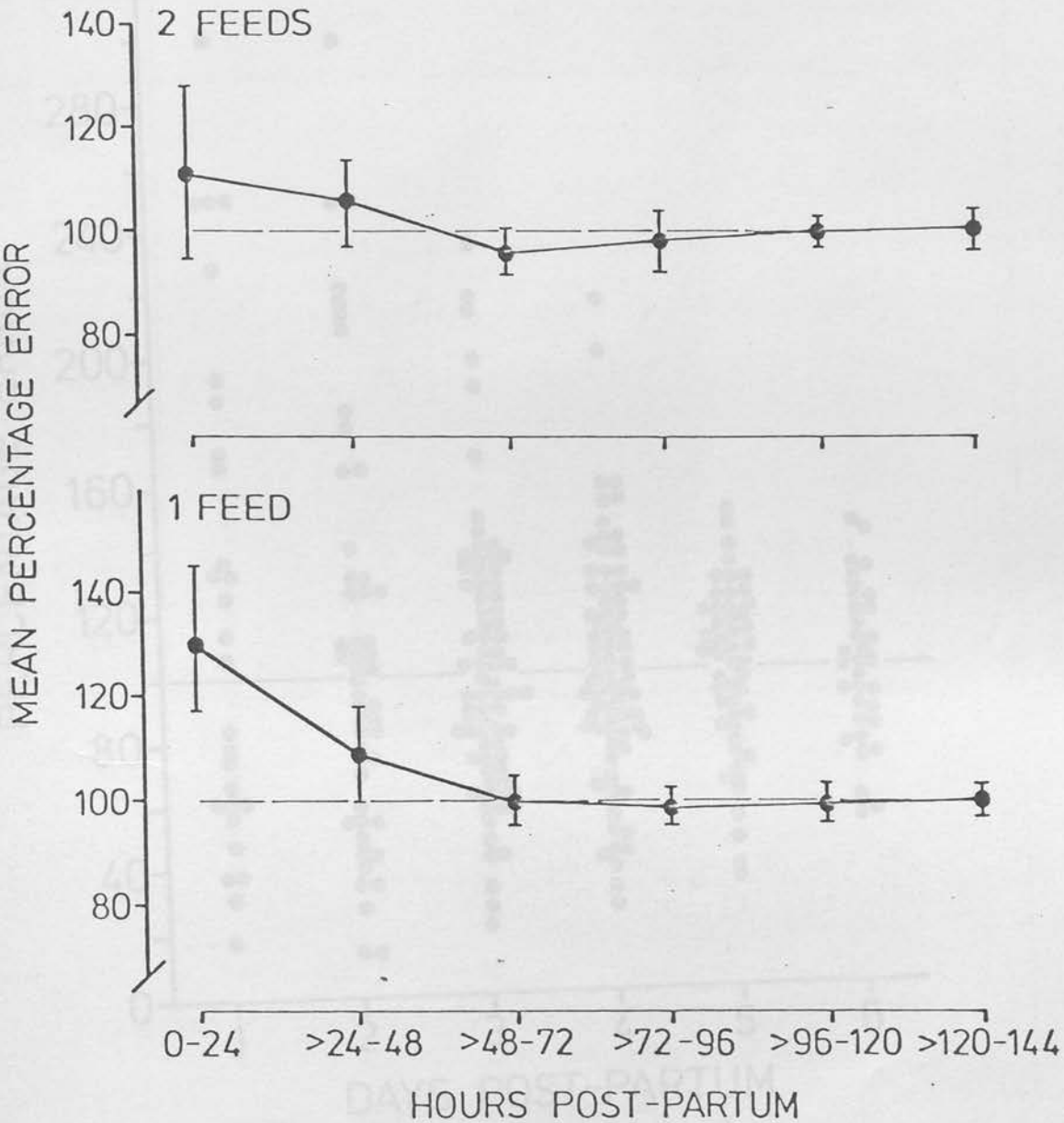

Fig. 8 Study A: Mean percentage error (± S.E.) of estimated intake in the first 6 days calculated from 1 feed and from 2 feeds.

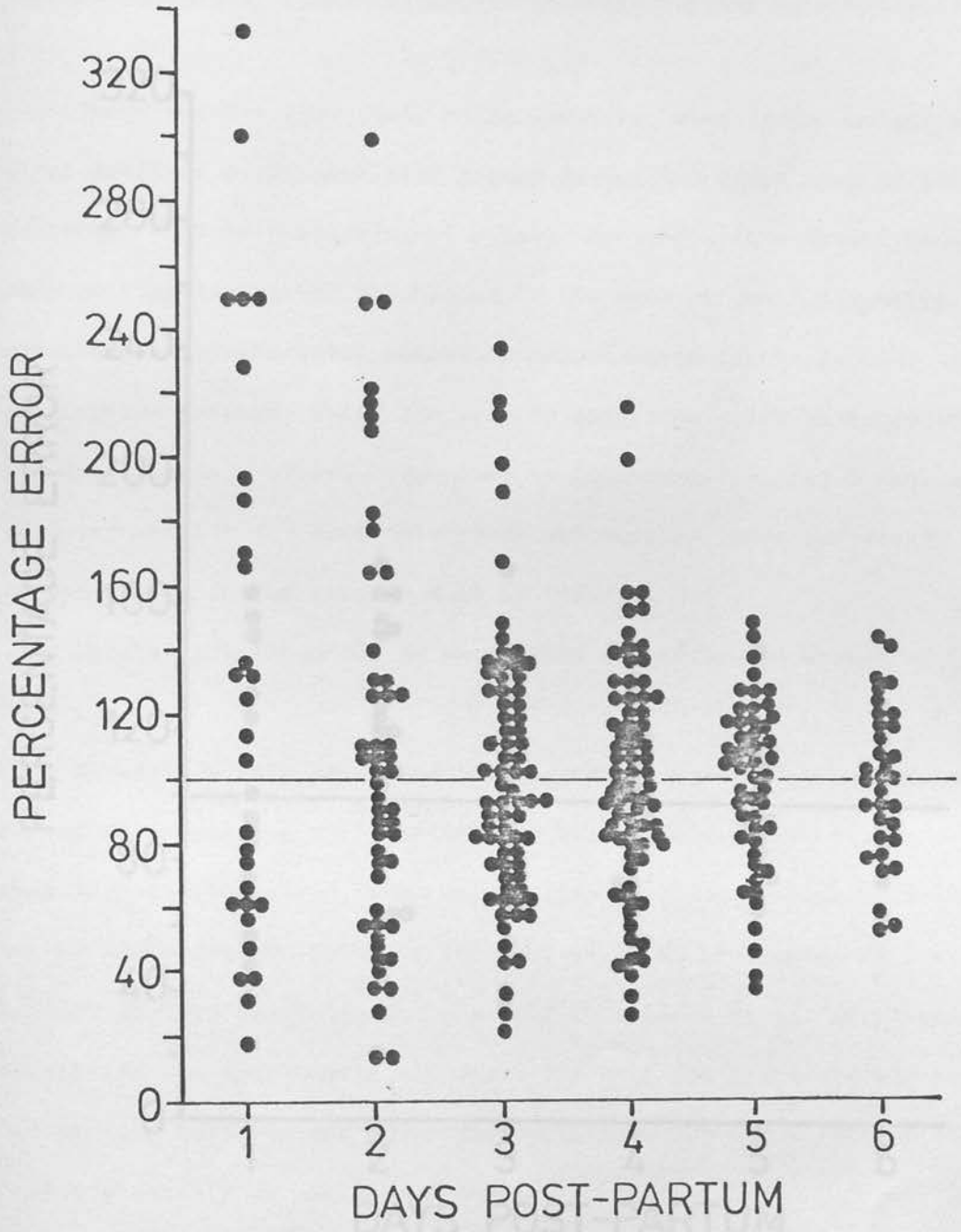

Fig. 9 STUDY A: Percentage error of estimated intake based on 1 feed, for each feed, days 1-6.

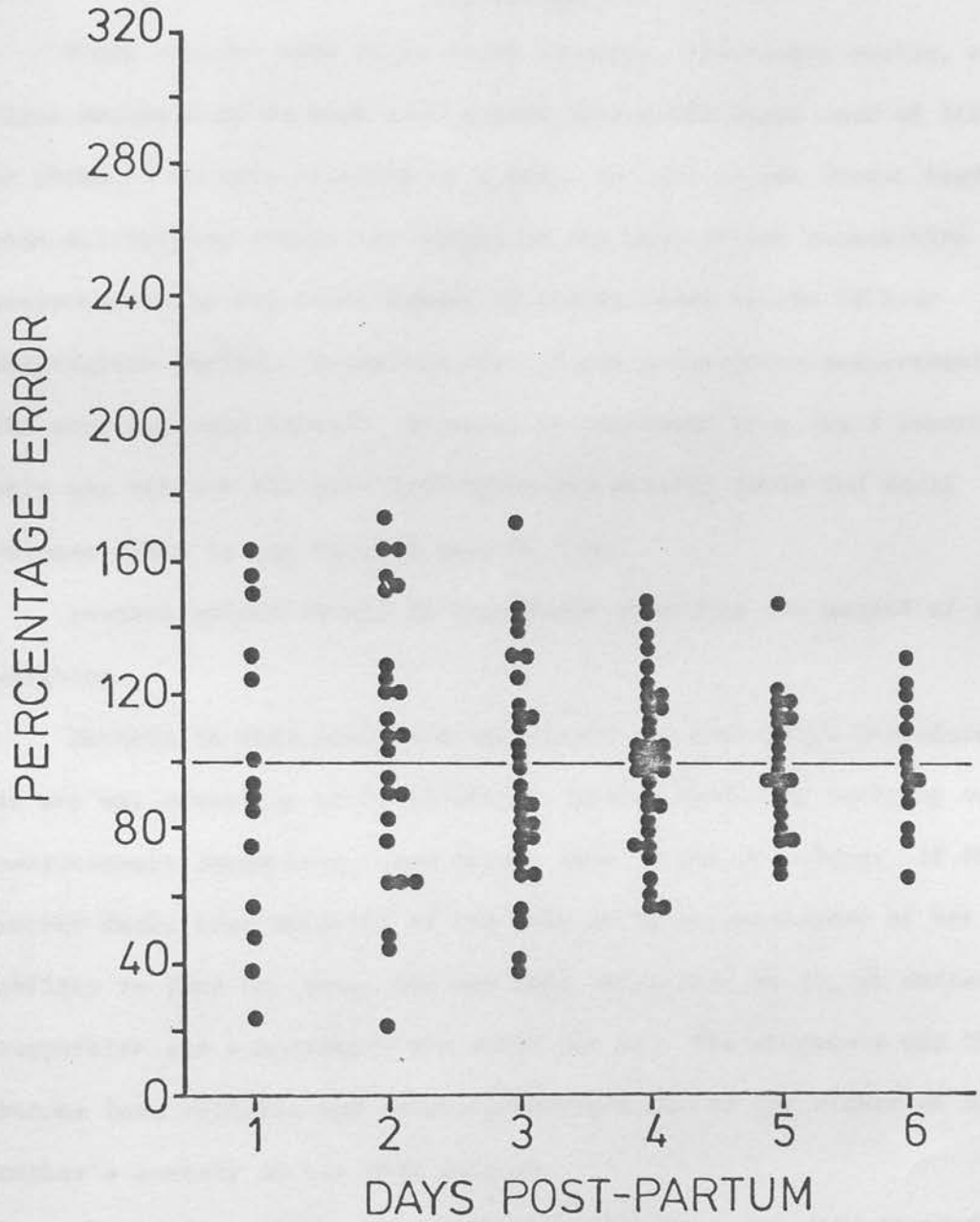

Fig. 10 STUDY A: Percentage error of estimated intake based on 2 feeds, for each feed, days 1-6.

(iii) Percentage errors (Figure 8)

The mean percentage error for every feed on each postpartum day on the basis of 1 and of 2 feeds is shown in Figure 8. These data are plotted individually for every feed in Figures 9 and 10, and show that from day 3 onwards the accuracy of estimated intakes is increased.

3.4 DISCUSSION

These results show that, using accurate, electronic scales, a close estimate of 24 hour milk intake during the first week of life can be obtained by test weighing of a baby for one or two breast feeds and then multiplying either the single or the mean of two consecutive measurements by the total number of breast feeds in the 24 hour observation period. Using the mean of two consecutive measurements is the more accurate method. Accuracy is increased from day 3 onwards; this may reflect the more infrequent and erratic feeds and small volumes taken in the first 2 days of life.

Several points should be considered regarding the method of test weighing.

Mothers in this study did not regard the test weigh procedure as in any way assessing their ability to breast feed. By carrying out the measurements themselves, they became used to the procedure. If the mother feels test weighing of the baby to be an assessment of her ability to feed her baby, she may feel threatened by it, no matter how supportive and sympathetic the staff may be. The procedure may then become less reliable and counterproductive due to the effect of the mother's anxiety on her milk release.

The scales used in this study were accurate and easy to read, even when the baby was agitated. Normal ward scales cannot be read to an accuracy of less than 10 gm and this accuracy is reduced even further

if the baby is disturbed. This is particularly important in the early days, when measuring small amounts (1-5 gm) of colostrum or milk.

Test weighing is not advocated as a routine procedure on postnatal wards. In cases where staff may consider it to be a necessary procedure, due thought should be given to the effect of maternal anxiety on milk release, and to the accuracy of the equipment used.

The procedure described gives a minimally invasive method of estimating milk intake in the first few days of life. These data indicate that this method of measurement may be used as a reasonably reliable tool for estimating milk intake from the third postpartum day onwards and that for the purpose of research studies may be used as a measure of milk intake.

CHAPTER 4

STUDY B: EARLY MILK TRANSFER AND THE DURATION OF BREAST FEEDING

4.1 INTRODUCTION

As stated in Chapter 3.1, the first objective of the study described in this chapter (Study B) was to investigate whether or not milk intake by the baby on the third postpartum day was reflected in the subsequent duration of breast feeding.

A second objective was to compare the clinical feeding practices of mothers who were giving larger amounts of milk on the third postpartum day with those who were giving lesser amounts of milk.

It was recognised that the increased duration of breast feeding at 16 weeks in those mothers who gave the largest amounts of milk on day 3 did not necessarily imply a cause and effect relationship. Further analysis was carried out to see whether the mother's background and environment, as measured by social class, was an important confounding factor in the subsequent duration of breast feeding.

Milk intake was measured by the estimated method based on a single test weigh which was described in Chapter 3 (3.2).

4.2 PATIENTS AND METHODS

(i) Patients

Forty-seven breast feeding women and their babies were recruited from the postnatal wards of the Simpson Memorial Maternity Pavilion. All babies were normal birthweight (>2500g) and gestation (38+ weeks) and were progressing normally on the third postnatal day; no baby who was jaundiced on that day was included in the study.

(ii) Test-weighing

A test-weighing was carried out at one morning feed on the third postnatal day. Test-weighing was performed as described in 3.2 and an estimated 24 hour milk intake calculated.

On the basis of this estimated 24 hour milk intake, the mothers were divided into three groups as follows:-

"high" group (more than 200g milk per 24 hours, n=13), "medium" group (50-200g per 24 hours, n=22) and a "low" group (less than 50g per 24 hours, n=12). Mothers were not told of their allocation into these groups, although all mothers knew the intake of milk at test-weigh. The clinical characteristics of mothers and babies are shown in Table 2.

(iii) Clinical information

The following information was recorded for each mother and baby during the first 144 hours after delivery; the number of breast feeds given, the number and volume of complementary and supplementary feeds, the time of the first breast feed, and the baby's weight on days 2, 4 and 6. The test weigh was repeated on day 6 (120-144 hours postpartum) and an estimated intake calculated for that day.

All mothers were visited at home by the researcher at 16 weeks postpartum, to determine the duration of breast feeding. Mothers were not told of this follow-up visit until they were contacted by letter or telephone before 16 weeks and permission requested for a follow-up visit. This was to forestall any improvement in duration of breast feeding due to extra interest and involvement which the mother might feel as a result of the project (1.2.3). All mothers agreed to the follow-up visit.

(iv) Social Class

Each mother was allocated to a social class group according to her husband's occupational grouping in the Registrar General's Classification of Occupation (1970). There were 17 women in social class I, 10 in social class II, 17 in social class III and 2 in social

TABLE 2 CLINICAL CHARACTERISTICS OF MOTHERS AND BABIES IN HIGH, MEDIUM AND LOW MILK TRANSFER GROUPS

GROUPS	AGE (YEARS) MEAN ± SD	PARITY	MODE OF DELIVERY	MATURITY AT DELIVERY (WEEKS) MEAN ± SD	ONSET OF LABOUR	INFANT BIRTH WEIGHT (KG)	NO OF BABIES WITH BILIRUBIN >240 µmol
HIGH MILK TRANSFER 200g/DAY (n = 13)	27.6 ± 3.2	9 PRIM 4 PARA	7 SVD 3 FORCEPS 3 SECTION	40 ± 0.9	5 SPON. 5 IND. 3 EL. SECTION	3.5 ± 0.28	1
MEDIUM MILK TRANSFER 50-200/g DAY (n = 22)	27 ± 5.2	14 PRIM 8 PARA	15 SVD 5 FORCEPS 2 SECTION	39.9 ± 1	12 SPON. 9 IND. 1 EL. SECTION	3.4 ± 0.46	2
LOW MILK TRANSFER 50g/DAY (n = 12)	26 ± 3.6	9 PRIM 3 PARA	7 SVD 3 FORCEPS 2 SECTION	40 ± 1.1	6 SPON. 5 IND. 1 EL. SECTION	3.5 ± 0.59	2

class IV. In view of the small numbers in social class IV, mothers from groups III and IV were combined and compared with mothers in groups I and II.

(v) Clinical practice

At the time this study was performed, it was normal hospital practice to offer the baby a dextrose feed (5% dextrose in water) three to four hours after delivery and to put the baby to the breast for the first time at the next feed. After each breast feed, the baby was offered an additional dextrose feed. Babies were fed on demand (that is, when the baby woke and cried) but a supplementary dextrose feed was offered overnight if the mother was tired.

(vi) Statistics

All statistics were performed using either Student's t-test, or chi-square.

4.3 RESULTS

(i) Duration of breast feeding (Figure 11).

Duration of breast feeding was related to the "high", "medium" and "low" groupings of mothers on day 3. The number of women continuing to feed in each group was significant at 6 weeks ("high"v. "low" $p < 0.01$, "medium" v. "low" $p < 0.05$). At 16 weeks the continuation rates were 69% in the high group, 59% in the "medium" group and 33% in the "low" group; these differences were not significant.

(ii) Sixth day test-weigh (Figure 12)

The mean ($\pm$ SE) milk intake on day 6 was 558 ± 44g in the "high" group, 399 ± 39g in the "medium" group and 311 ± 32g in the "low" group ("high" v. "low" $p < 0.001$, '"low" v. "medium" $p < 0.05$).

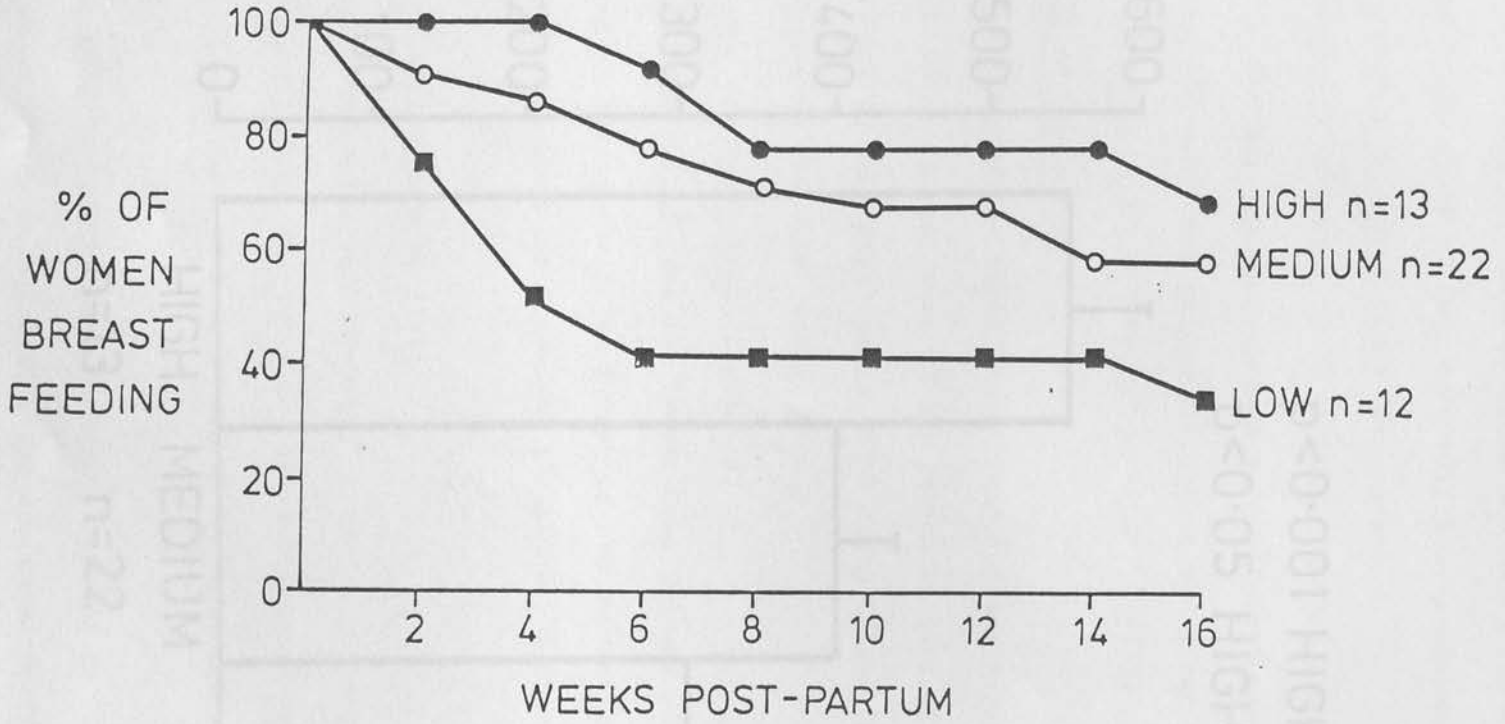

Fig. 11 Study B: Duration of breast feeding for women in "high", "medium" and "low" milk intake groups.

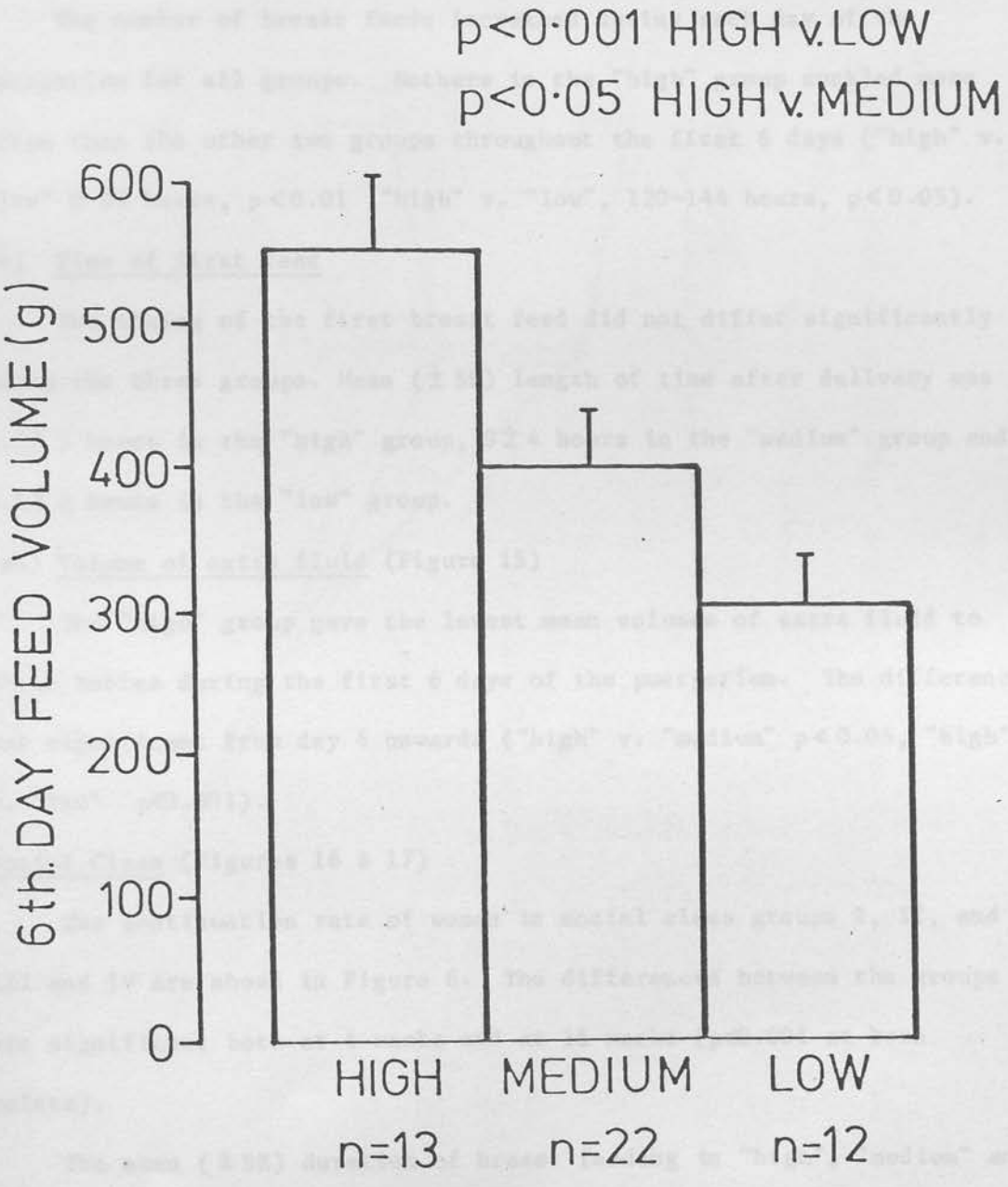

Fig. 12 Study B: 6th day feed volume (g) for women in "high", "medium" and "low" milk intake groups.

(iii) Baby Weight (Figure 13)

Babies' weight loss from birth was similar in the three groups for the first 2 postpartum days. By the sixth day, differences between the groups were significant; babies in the "high" group had a mean (±S.E.) loss of 17.6 ± 30g, the "medium" group was 95.4 ± 24g and the "low" group was 178.3 ± 16g. (high v. low, $p < 0.001$, low v. medium $p < 0.05$).

(iv) The number of breast feeds (Figure 14)

The number of breast feeds increased during each day of the puerperium for all groups. Mothers in the "high" group suckled more often than the other two groups throughout the first 6 days ("high" v. "low" 0-24 hours, $p < 0.01$ "high" v. "low", 120-144 hours, $p < 0.05$).

(v) Time of first feed

The timing of the first breast feed did not differ significantly among the three groups. Mean (± SE) length of time after delivery was 6.7 ± 3 hours in the "high" group, 9 ± 4 hours in the "medium" group and 8.5 ± 6 hours in the "low" group.

(vi) Volume of extra fluid (Figure 15)

The "high" group gave the lowest mean volumes of extra fluid to their babies during the first 6 days of the puerperium. The difference was significant from day 4 onwards ("high" v. "medium" $p < 0.05$, "high" v. "low" $p < 0.001$).

Social Class (Figures 16 & 17)

The continuation rate of women in social class groups I, II, and III and IV are shown in Figure 6. The differences between the groups are significant both at 6 weeks and at 16 weeks ($p < 0.001$ at both points).

The mean (± SE) duration of breast feeding in "high", "medium" and "low" groups within each social class are shown in Figure 17. For this calculation, a continuation rate of more than 16 weeks was given a

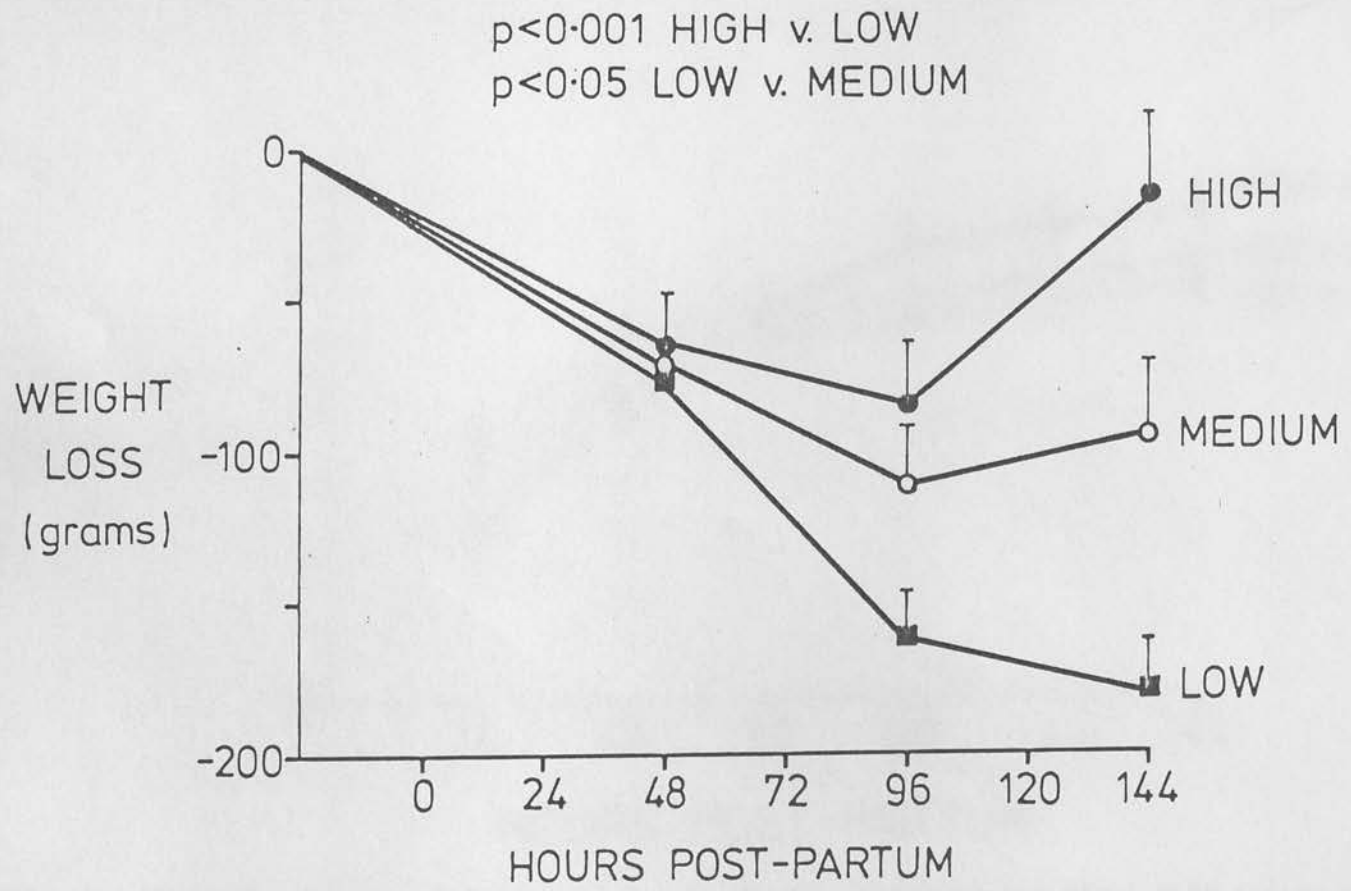

Fig. 13 Study B: Change in babies weight from birth in "high", "medium" and "low" milk intake groups.

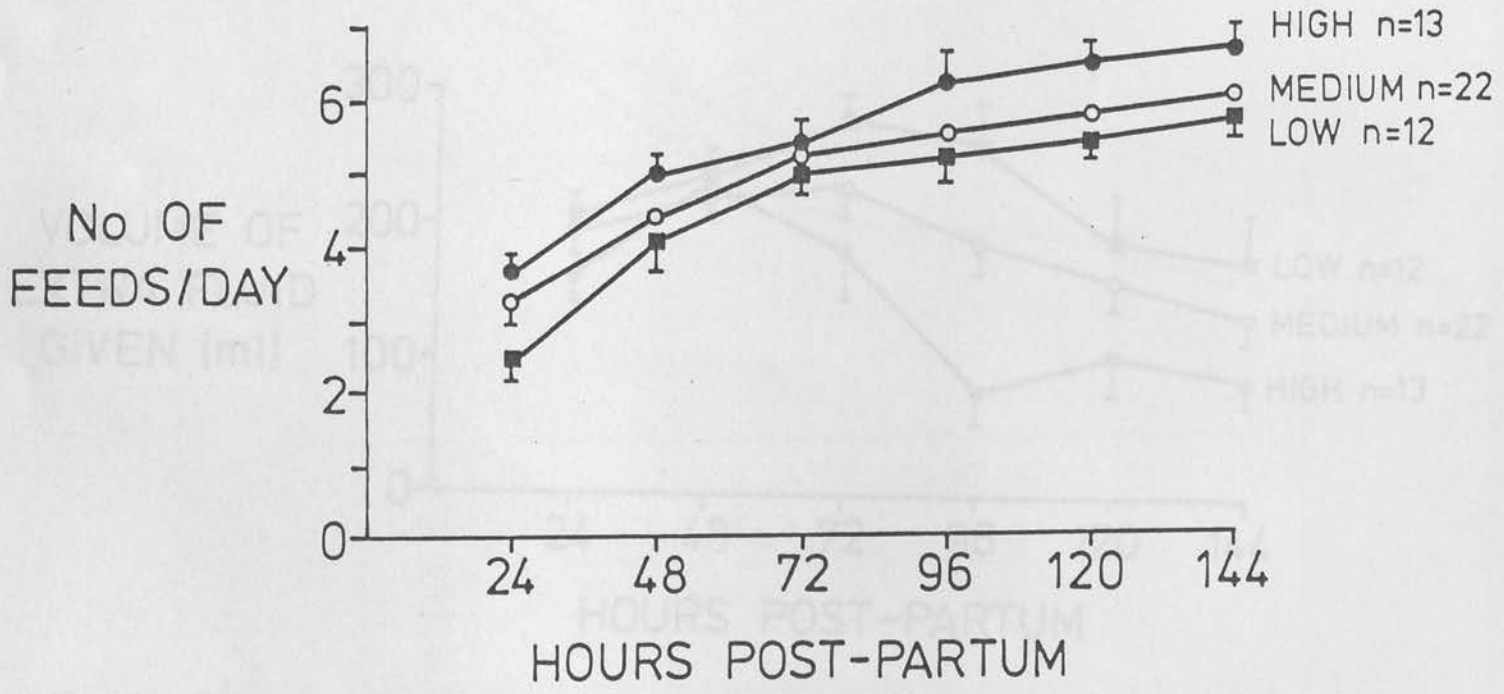

Fig. 14 Study B: Number of feeds per day in "high", "medium" and "low" milk intake groups.

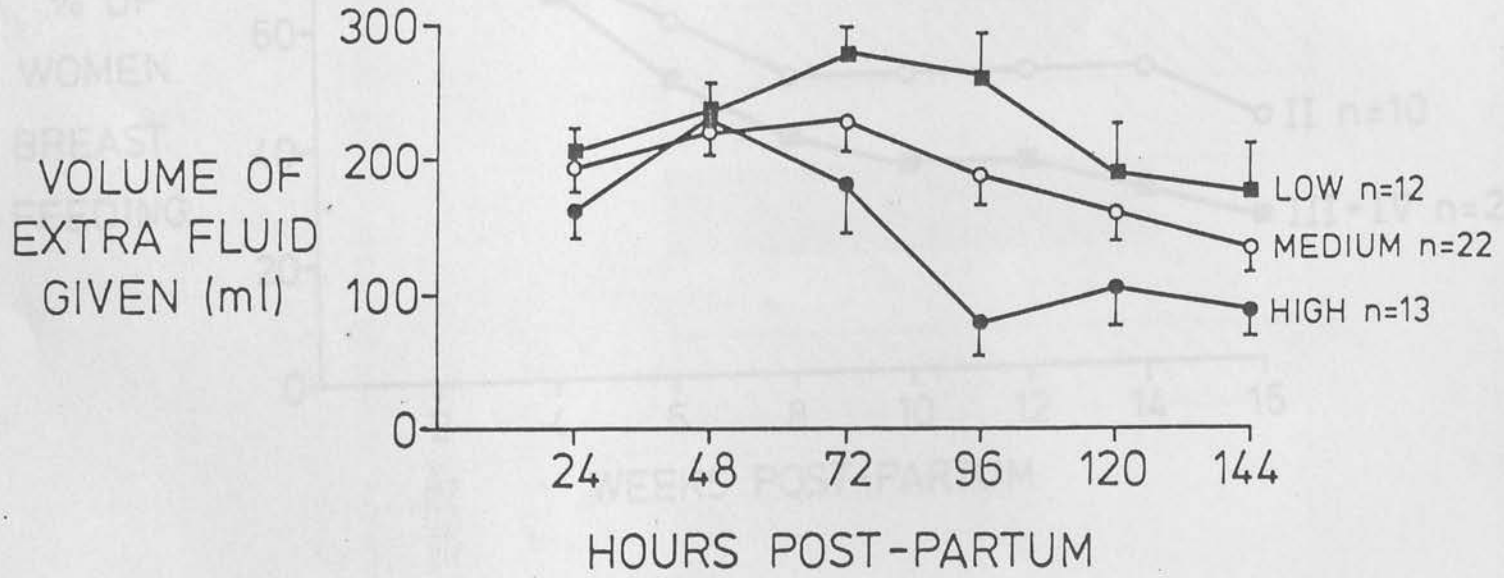

Fig. 15 Study B: Volume of extra fluid given (ml) in the first 6 days in "high", "medium" and"low" intake groups.

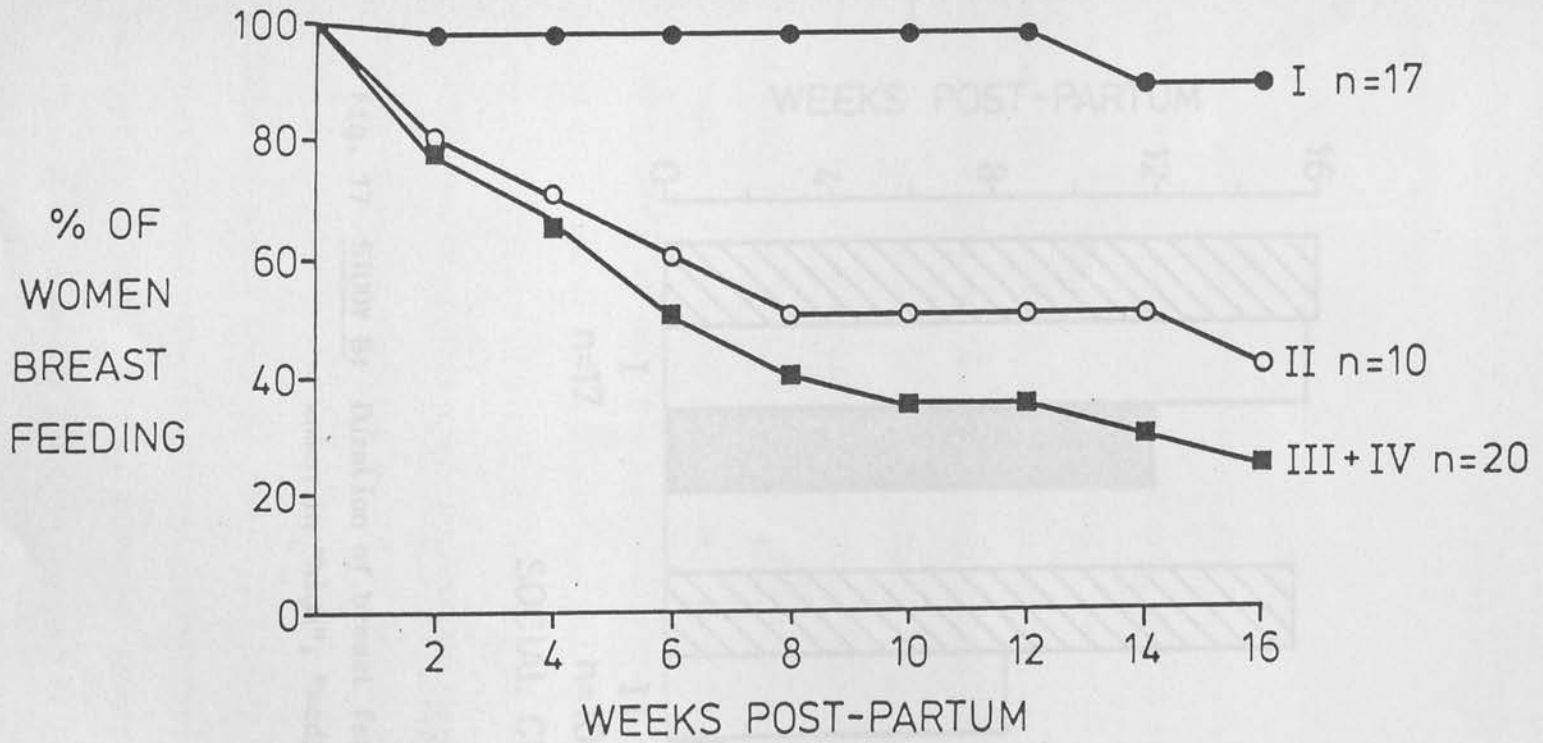

Fig. 16 Study B: Duration of breast feeding for women in Social Class groups I, II, III and IV.

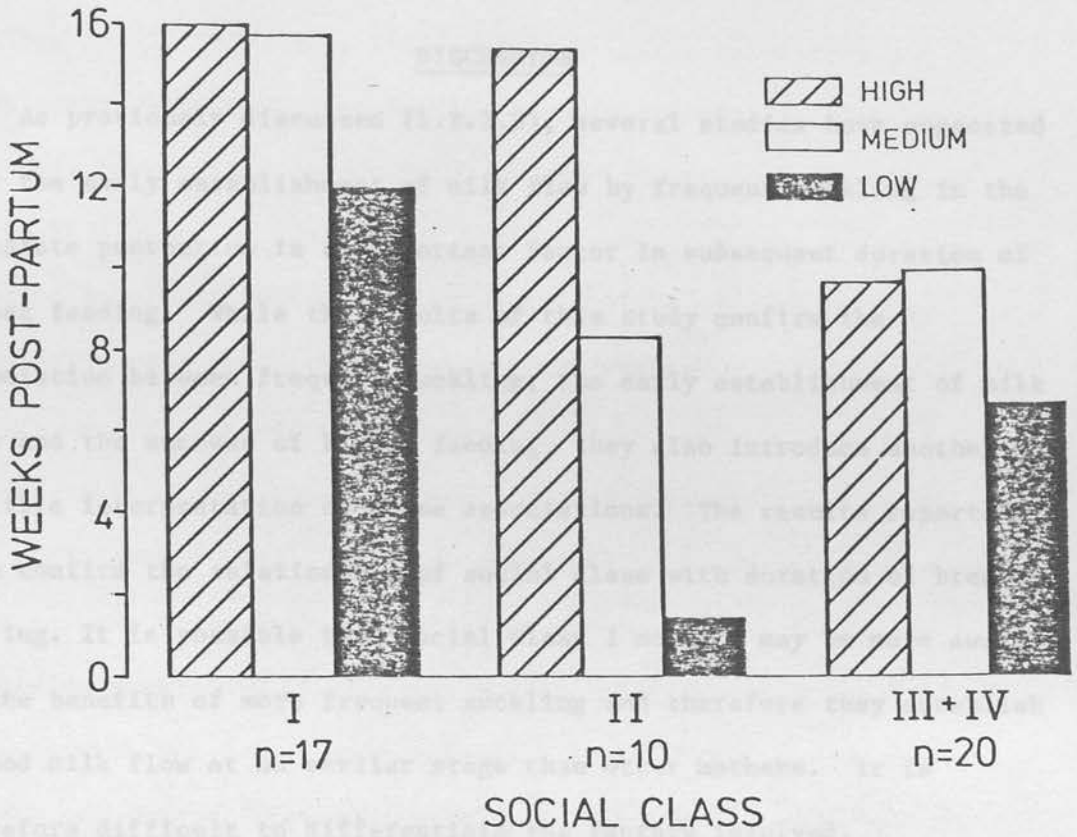

Fig. 17 STUDY B: Duration of breast feeding and social class for women in "high", "medium", and "low" intake groups.

value of 16 weeks. In social classes I and II, the "low" group had a shorter duration of feeding than the "high" group ($p<0.05$) but this difference was not apparent in social classes III and IV.

Mothers in the "high" group in social classes I and II fed for significantly longer than "high" group mothers in social classes III and IV. ($p<0.05$).

4.4 DISCUSSION

As previously discussed (1.2.2.3), several studies have suggested that the early establishment of milk flow by frequent suckling in the immediate puerperium is an important factor in subsequent duration of breast feeding. While the results of this study confirm the association between frequent suckling, the early establishment of milk flow and the success of breast feeding, they also introduce another possible interpretation of these associations. The results reported here confirm the relationship of social class with duration of breast feeding. It is possible that social class I mothers may be more aware of the benefits of more frequent suckling and therefore they establish a good milk flow at an earlier stage than other mothers. It is therefore difficult to differentiate the factors involved.

The results of this study support the view that policies which encourage frequent suckling should be advocated. At the same time, it should be recognised that other equally important factors affect the duration of breast feeding. The relationship of social class with duration suggests that factors in the maternal environment are of critical importance. This is discussed in more detail in Chapter 7.

This study suggests that the outcome of breast feeding may be affected and assessed as early as the third postpartum day. The

differential milk intake was reflected by the more rapid return towards birth weight in the babies who were in the "high" intake group. These findings support the reliability of the assessment of milk intake by a single test weigh.

In the present study, the third day feed volume did not appear to have been influenced to a major degree of the timing of the first feed. Starling et al (1979) have similarly been unable to confirm a relationship between breast feeding success and time of first suckling. More work is required to determine whether the time of first suckling is itself a major determinant of breast feeding success or whether its reported beneficial effect (Salariya et al,1978) is due to its association with some other more critical factor.

It was of interest that mothers who gave the largest milk volumes to their babies were those who suckled most frequently and relied least upon additional fluids. It is not possible to determine whether the increased use of additional fluids reduced the baby's intake by inhibiting sucking or whether the additional fluids were most necessary in those with the lowest milk volumes. It is likely that both factors operate and that a "vicious circle" is created whereby the use of additional fluids reduces milk volume which, in turn, increases the need for additional fluid. In the next chapter, the importance of policies in relation to supplementary fluid are examined in more detail by comparing three ward regimes which operated different practices.

CHAPTER 5

STUDY C: THE RELATIONSHIP OF EXTRA FLUID INTAKE BY THE BABY IN THE EARLY POSTPARTUM DAYS WITH DURATION OF BREAST FEEDING.

5.1 INTRODUCTION

This chapter describes a study (Study C) which investigated the relationship of extra fluid intake by breast-fed babies in the early puerperium with duration of breast feeding. This study was planned as a result of the findings of Study B, described in Chapter 4.

Three different regimens of giving extra fluid were monitored, to examine the effects of deliberately different policies on the immediate and long term outcome of breast feeding.

5.2 PATIENTS AND METHODS

(i) Clinical Practice

The study was carried out in the Simpson Memorial Maternity Pavilion, Edinburgh. Three postnatal wards (A,B & C) all practiced a policy of "demand" breast feeding (that is, feeding when the baby wakes and cries). These wards differed in their approaches towards the use of supplementary or complementary fluids, in the form of either formula milk, or clear fluids. Clear fluids were given either as Hartmann's solution or a 5% solution of dextrose in water.

In Ward A, the use of complementary fluids after breast feeding was not encouraged and clear fluids were only given infrequently when the mother felt that the baby would not settle.

In Ward B, complementary feeds, usually clear, but occasionally milk, were offered to the baby after each feed during the first six days postpartum.

The use of extra fluids in Ward C was intermediate between Wards A and B; supplementary and complementary fluids were offered, but not on a strict routine basis as in Ward B.

(ii) Patients

The study included all 78 breast feeding mothers and their babies who were admitted to the three postnatal wards during the three week

period of study (Ward A, n=25, Ward B, n=26, Ward C, n=27). Mothers with multiple births and mothers whose babies were immediately admitted to the Special Care Unit were excluded.

The number of breast feeds and the volume of supplementary fluids given were recorded from the maternal records for each 24 hour period, Day 1 corresponding to the first 24 hours after birth. Two mothers bottle fed their babies for the first 4 days before changing to breast feeding; these mothers were included only after they started to breast feed.

Data on maternal age, parity, infant's sex, birth weight and day of discharge home were recorded from hospital records.

(iii) Follow-up

Previous studies (1.2.3) have shown that extra interest and involvement with the breast feeding mother influences the duration of breast feeding. The mothers were therefore not aware of the study until 12 weeks postpartum when they were contacted and permission requested for a follow-up visit. This visit took the form of an interview by the researcher to ascertain the duration of breast feeding. One woman refused permission for a follow-up visit.

(iv) Social Class

The Registrar General's classification of social class by partner's occupation (1970) was used. Single women (n=2) were included in the analysis on the basis of their own occupation. There were too few women in classes IV and V to consider them as a separate group; comparisons were therefore made between women in social classes I and II, and social classes III, IV and V. Unemployed partners were classed according to their previous occupation.

(v) Statistics

Comparisons between groups were made by Students t-test.

5.3 RESULTS

There were no significant differences between mothers in the 3 wards in terms of parity, age, social class, birth weight, sex of baby or in the number of babies who required treatment for neonatal jaundice (Table 3).

(i) Intake of fluids (Figures 18 & 19)

There was an inter-ward difference in intake of extra fluids, both clear and milk (Figures 18 & 19). Ward A gave less extra fluid (48 $\pm$ 8 mls mean daily intake) than either Ward B (107 $\pm$ 14 mls) or Ward C (80 $\pm$ 13 mls). The intake of extra fluid in Ward B was not significantly different from Ward C as a mean daily intake; however, comparison of extra fluids on day 1 (0-24 hrs), day 2 (24-48 hrs) and day 3 (48-72 hrs) showed that Ward B gave more extra fluid ($p < 0.05$) than Ward C on day 2 (Figure 18). Ward A gave significantly less fluid on all three days than either of the other two wards (Figure 19).

There was no significant difference in intake of extra fluids between social class groups, or within social class groups on each ward (Tables 4 & 5).

There was no significant difference in intake of fluids between mothers who stopped breast feeding before 12 weeks and those who continued (Table 6).

(ii) Frequency of Feeds

The "low volume" ward, Ward A, had a higher frequency of feeds (4.6 $\pm$ 0.4 SE) than the "intermediate" volume ward, Ward B ($p < 0.05$) on Day I. (Figure 20). Frequency of feeds was not different between wards at any other time.

TABLE 3 CLINICAL CHARACTERISTICS OF MOTHERS & BABIES IN WARDS A, B & C - STUDY C

		WARD A n = 25	WARD B n = 27	WARD C n = 26
PARITY	PRIM.	11	10	13
	PARA.	15	17	12
MATERNAL AGE	MEAN	27.1	28.8	26.4
	RANGE	± 1.2	± 0.8	± 0.8
SOCIAL CLASS	I & II	14	11	14
	III, IV & V	12	15	13
SEX OF BABY	GIRLS	11	13	16
	BOYS	15	14	10
BIRTH WEIGHT	(kg)	3.47	3.46	3.26
	± S.E.	± 0.06	± 0.07	± 0.09
NUMBER OF BABIES REQUIRING TREATMENT FOR JAUNDICE		0	1	1

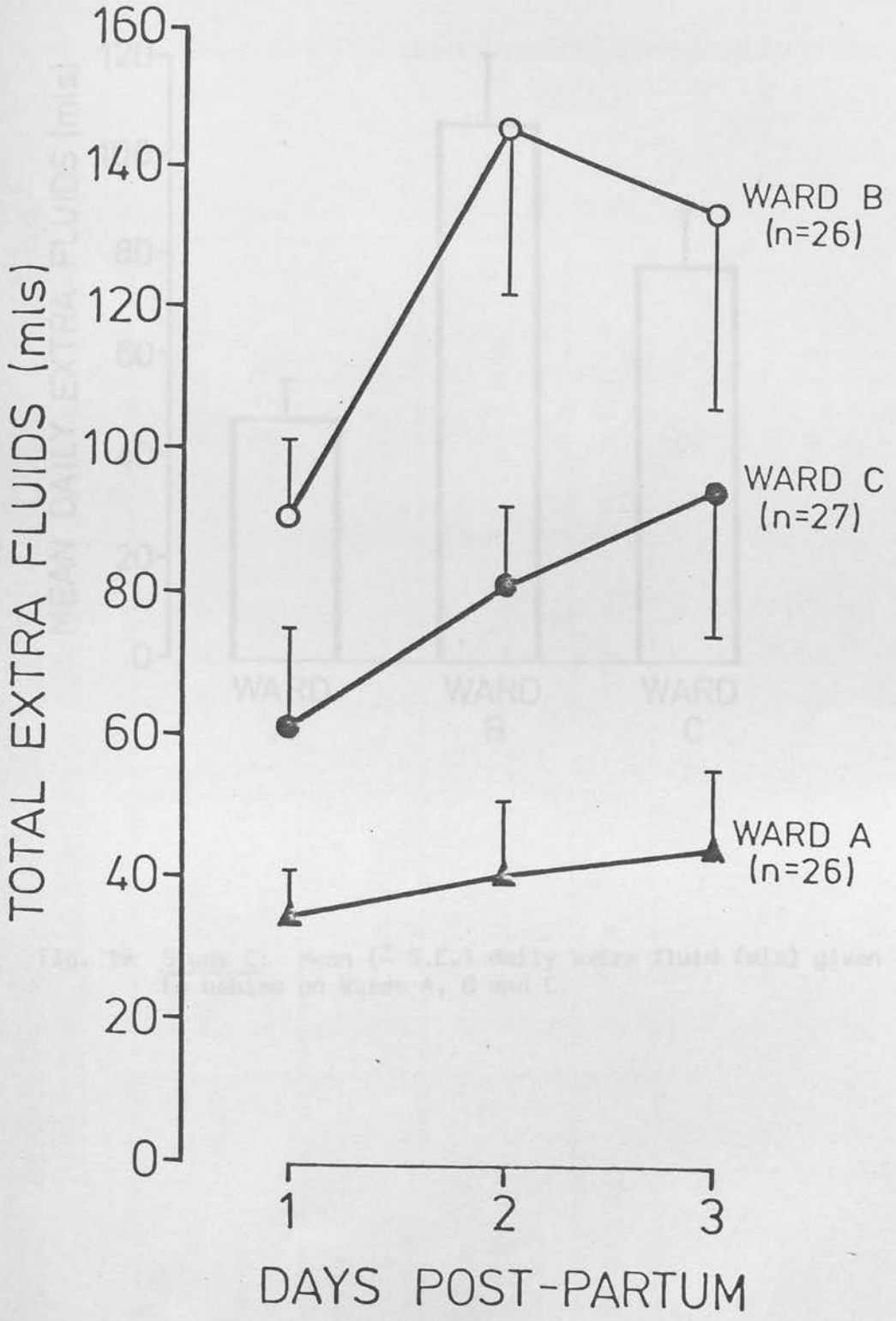

Fig. 18 Study C: Mean (± S.E.) total extra fluid (mls) given in the first 3 days to babies on Wards A, B and C.

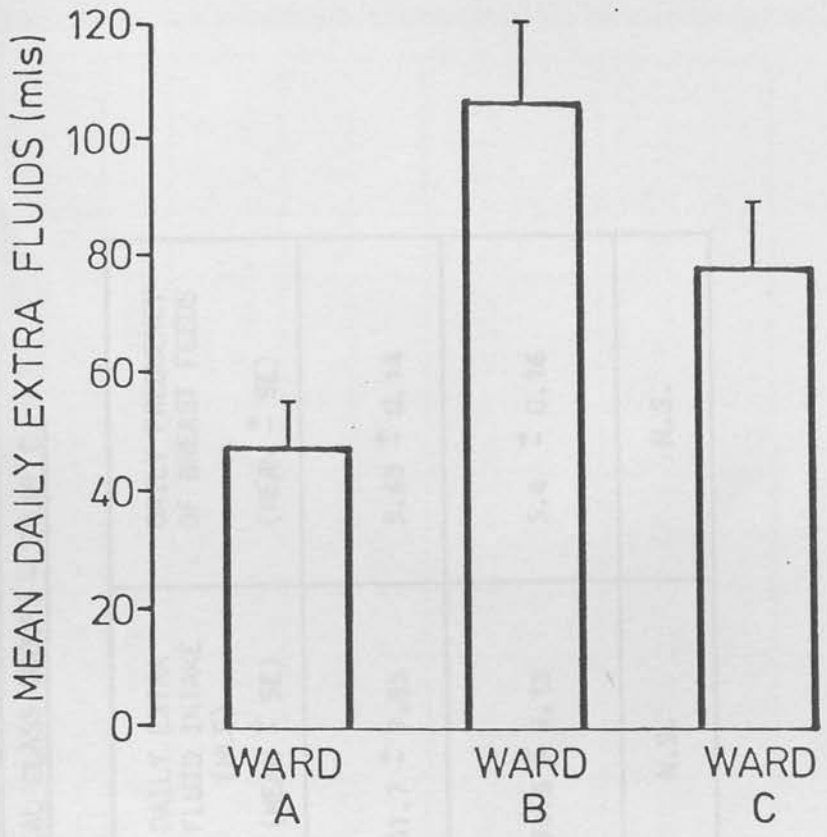

Fig. 19 Study C: Mean (± S.E.) daily extra fluid (mls) given to babies on Wards A, B and C.

TABLE 4 DURATION OF BREAST FEEDING, EXTRA FLUID INTAKE AND FREQUENCY OF BREAST FEEDS IN WOMEN IN DIFFERENT SOCIAL CLASS GROUPS - STUDY C

	DURATION OF BREAST FEEDING (WEEKS) (MEAN ± SE)	DAILY EXTRA FLUID INTAKE (MLS) (MEAN ± SE)	DAILY FREQUENCY OF BREAST FEEDS (MEAN ± SE)
SOCIAL CLASS I & II (n = 39)	10.56 ± 0.55	61.7 ± 9.85	5.63 ± 0.14
SOCIAL CLASS III, IV & V (n = 39)	7.85 ± 0.67	74.6 ± 9.15	5.4 ± 0.16
SIGNIFICANCE	$p < 0.01$	N.S.	N.S.

TABLE 5 DURATION OF BREAST FEEDING, EXTRA FLUID INTAKE, AND FREQUENCY OF BREAST FEEDS IN WOMEN IN DIFFERENT SOCIAL CLASS GROUPS IN WARDS A, B AND C

	WARD A		WARD B		WARD C	
	I & II n = 14	III,IV & V n = 12	I & II n = 11	III,IV & V n = 15	I & II n = 14	III,IV & V n = 13
MEAN FREQUENCY OF BREAST FEEDS ± SE	5.72 ± 0.1	5.72 ± 0.3	5.37 ± 0.2	5.18 ± 0.3	5.76 ± 0.3	5.34 ± 0.2
MEAN DURATION OF BREAST FEEDING (WEEKS) ± SE	10.6 ± 0.9	7.8 ± 1.25	10 ± 1.27 $p < 0.05$	6.4 ± 1	10.9 ± 0.7	9.5 ± 1.04
MEAN INTAKE OF EXTRA FLUIDS (MLS) ± SE	36.5 ± 8.08	58 ± 12.5	115 ± 20.4	102 ± 19.1	68.7 ± 19.6	91 ± 15.5

TABLE 6 EXTRA FLUID INTAKE AND FREQUENCY OF BREAST FEEDS GIVEN BY WOMEN WHO STOPPED BREAST FEEDING BEFORE 12 WEEKS AND WOMEN WHO CONTINUED TO BREAST FEED

	DAILY EXTRA FLUID INTAKE (MLS) (MEAN ± SE)	DAILY FREQUENCY OF BREAST FEEDS (MEAN ± SE)
MOTHERS STOPPED BREAST FEEDING BEFORE 12 WEEKS (n = 29)	89 ± 12.4	5.18 ± 0.2
MOTHERS CONTINUING TO BREAST FEED 12 WEEKS + (n = 49)	70.3 ± 9.41	5.7 ± 0.12
SIGNIFICANCE	N.S.	$p < 0.05$

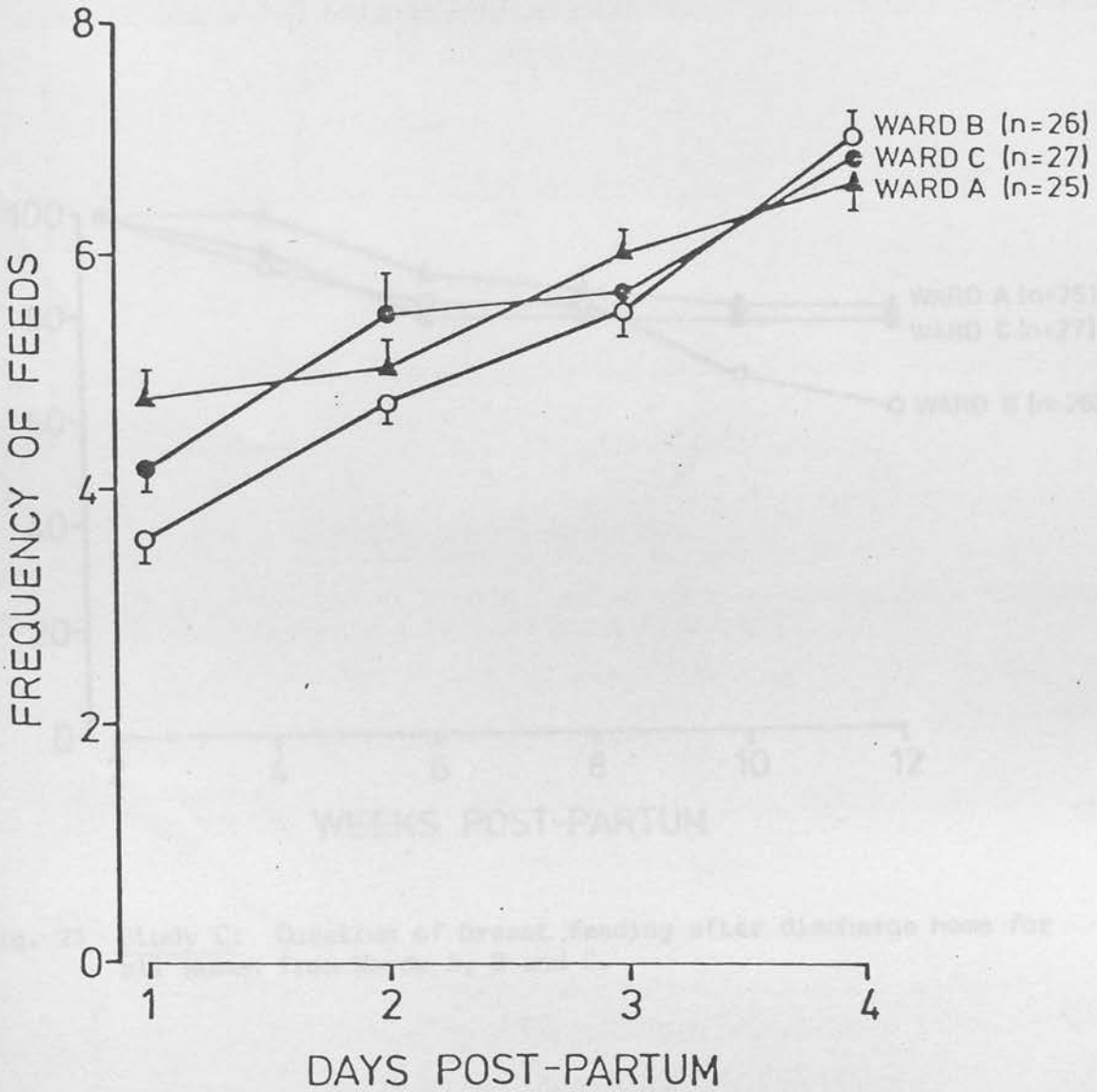

Fig. 20 Study C: Mean (± S.E.) frequency of breast feeds in the first 4 days in Wards A, B and C.

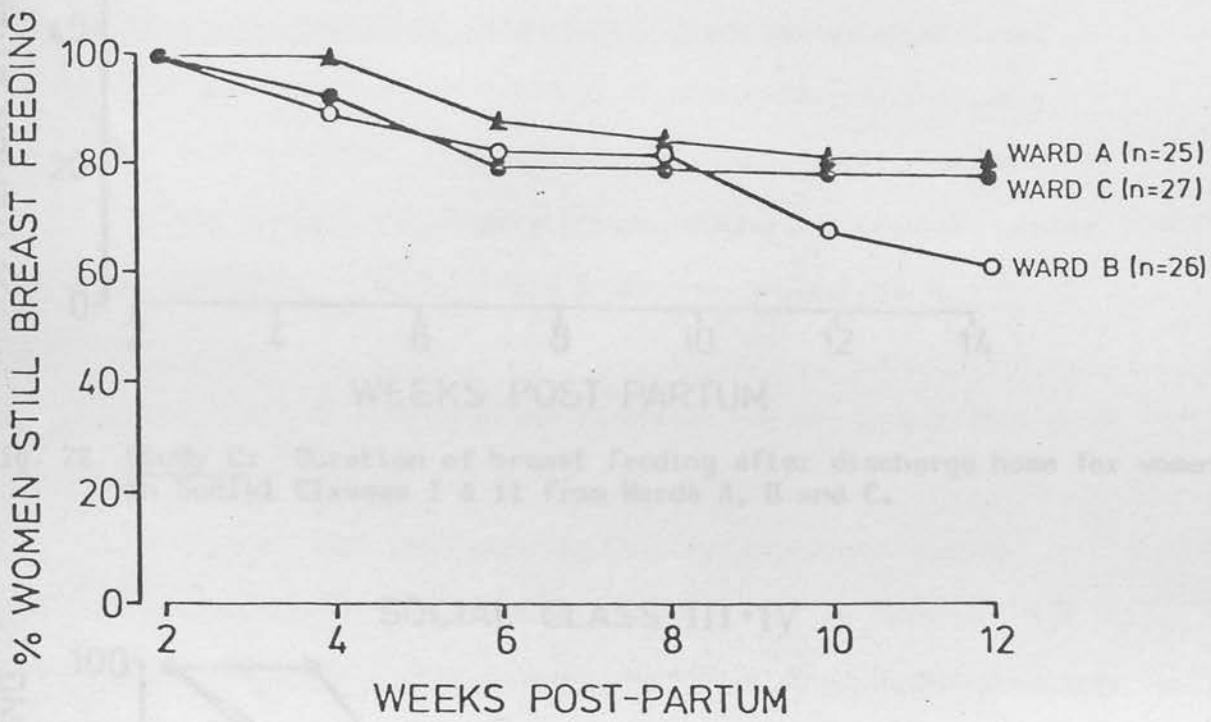

Fig. 21 Study C: Duration of breast feeding after discharge home for all women from Wards A, B and C.

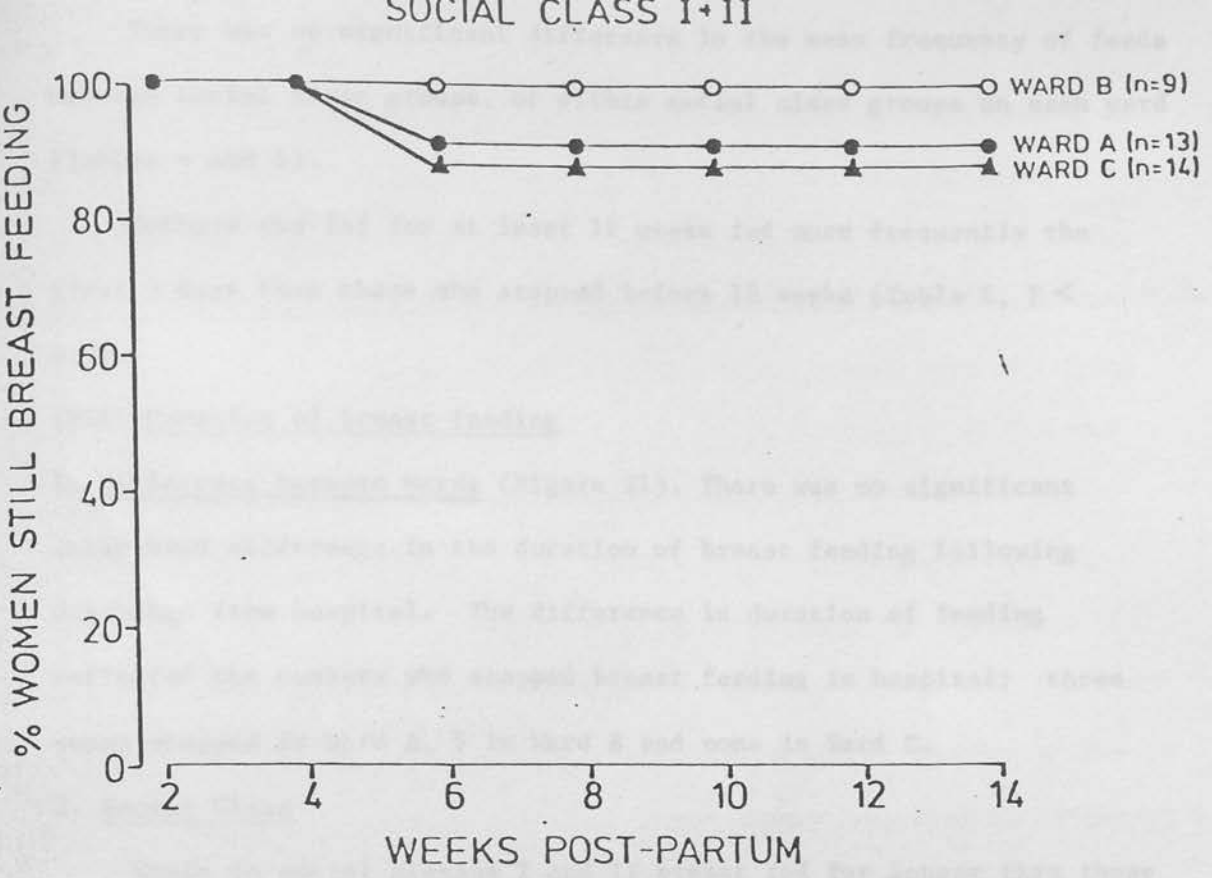

Fig. 22 Study C: Duration of breast feeding after discharge home for women in Social Classes I & II from Wards A, B and C.

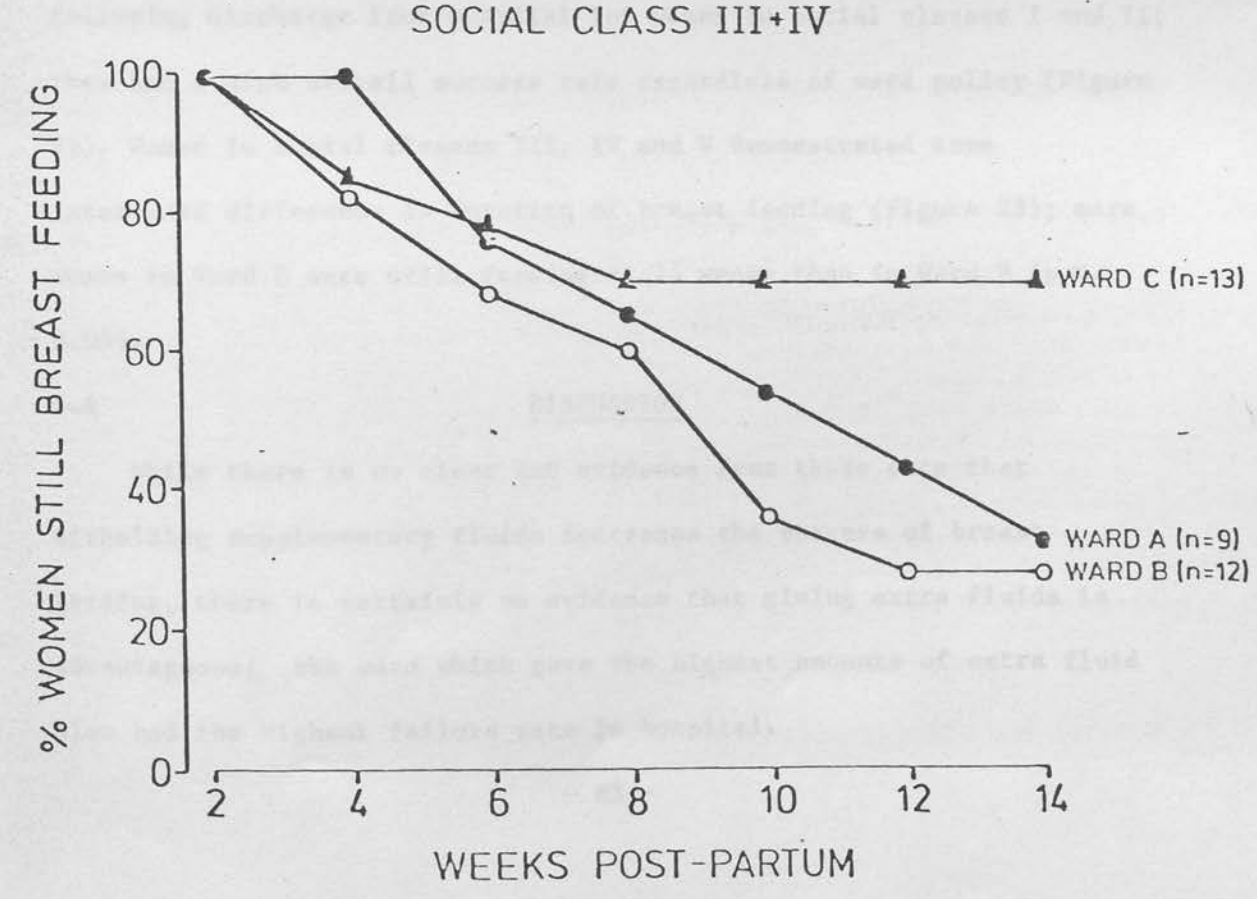

Fig. 23 Study C: Duration of breast feeding after discharge home for women in Social Classes III and IV.

There was no significant difference in the mean frequency of feeds between social class groups, or within social class groups on each ward (Tables 4 and 5).

Mothers who fed for at least 12 weeks fed more frequently the first 3 days than those who stopped before 12 weeks (Table 6, $P < 0.05$).

(iii) Duration of breast feeding

1. Difference between wards (Figure 21). There was no significant inter-ward difference in the duration of breast feeding following discharge from hospital. The difference in duration of feeding reflected the numbers who stopped breast feeding in hospital; three women stopped in Ward A, 5 in Ward B and none in Ward C.

2. Social Class

Women in social classes I and II breast fed for longer than those in social classes III, IV and V ($p < 0.01$, Table 4).

There was no ward difference in duration of breast feeding following discharge from hospital for women in social classes I and II; they had a high overall success rate regardless of ward policy (Figure 22). Women in social classes III, IV and V demonstrated some inter-ward difference in duration of breast feeding (Figure 23); more women in Ward C were still feeding at 14 weeks than in Ward B ($p < 0.05$).

5.4 DISCUSSION

While there is no clear cut evidence from these data that witholding supplementary fluids increases the success of breast feeding, there is certainly no evidence that giving extra fluids is advantageous; the ward which gave the highest amounts of extra fluid also had the highest failure rate in hospital.

It has been suggested (Yuille, 1979) that hyperbilirubinaemia may result from a low intake of fluid in the first few days of life, and that infants fed on breast milk alone may be more prone to developing jaundice. However, there was no difference in incidence of jaundice requiring treatment between the 3 wards. These babies were all being fed on a flexible feeding schedule, and it may be that milk flow was established more rapidly than would have been achieved on a rigid feeding schedule (Salariya et al, 1978), thus reducing any risk of hyperbilirubinaemia. The possibility of increasing the incidence of allergy by introducing foreign protein in the very early days (Matthews et al, 1977) is another consideration in the decision whether or not to recommend additional fluids at this time. These data show no advantage in giving extra fluids which would compensate for this risk.

In this study, an increased frequency of feeding in the first few days of life does appear to be associated with a longer duration of breast feeding as previously suggested by Salariya et al (1978) and as shown in Chapter 4. This study suggests that hospital policies may be related more to the immediate failure rate in hospital, rather than the failure rate at home; this is in agreement with a study by de Chateau et al (1977) and lends support to their suggestion that sympathetic ward management is necessary to overcome the effects of the "unnatural" and technical modern hospital environment. However, this study does not suggest that the use or non-use of supplementary fluid per se is the important factor in determining the success of breast feeding; other aspects such as the impact of staff attitudes may well be equally important, but are very difficult to measure objectively.

As in Study B (reported in Chapter 4), these results add further

evidence to suggest that social background and environment are strongly related to duration of breast feeding. The findings from this study (Study C), suggest that mothers in social class groups I and II have a high rate of success, and their success rates are relatively unaffected by ward policies or extra fluids. In contrast, mothers in social class groups III, IV and V are much less successful and may be more sensitive to differences in ward management.

5.5 CONCLUSIONS

Good management of breast feeding requires awareness of the many interrelated social, physical and emotional factors which are involved. The results provide no evidence to support the routine administration of supplementary fluids to all breast fed babies and support the concept of promoting policies which encourage frequent feeding.

The relationship between success and extra fluid administration is not absolute, as other factors also influence duration of breast feeding.

These results suggest that work which could clarify the factors within social class which affect breast feeding success might help to identify ways of helping those who are at greatest risk of breast feeding failure.

The further two studies described in this thesis were designed to examine not only management in hospital, but particularly the management of the breast feeding mother after she returns home.

CHAPTER 6

STUDY D: AN EXPERIMENTAL APPROACH TO HOME SUPPORT FOR THE BREAST FEEDING MOTHER

6.1 INTRODUCTION

The two previous studies (Chapter 4, Chapter 5) have indicated the continued relationship of social class with the duration of breast feeding; women in higher social class groups breast feed for longer. Many factors have been suggested to explain this phenomenon (Chapter 1) and it is likely that the explanation is multifactorial, involving many subtle mechanisms which are difficult to identify individually. However, from a nursing perspective, it is perhaps not as important to identify the mechanisms at work as to examine ways of overcoming the problem in practical terms. The Black Report (1980) suggests that part of the reason for the continued pattern of inequalities in health may be unequal access to and use of the health services available, and in particular the preventive services. The Report recommends that together with research into variables such as education, poverty, diet and linguistic capability, a more practical, experimental approach to provision of health care might also be successful in finding ways to improve the effectiveness of services for those most in need of care.

It has already been noted (1.2.2.3) that increased home support is associated with increased duration of breast feeding. However, no previous reports have studied a matched control group, or have examined and measured the way in which this support is provided. Is increased enthusiasm of the staff effective in itself, or does this increased enthusiasm result in more visits to and more contact with the mothers?

This chapter describes a small experimental study in which a structured system of postnatal support at home was provided for 28 breast feeding mothers. The results are compared with a matched control group.

All patients were mothers who left the Simpson Memorial Maternity Pavilion following the birth of a normal, mature baby weighing over 2.5 kg. They were all successfully breast feeding at the time of discharge. All mothers were resident in Edinburgh so that they could easily be visited regularly by the researcher.

The "study group" (n=28) were recruited to the study from the postnatal wards over a period of 10 weeks. The "control group" (n=52) consisted of the comparable mothers who delivered their babies in the 20 weeks subsequent to the period of the study group.

All mothers in both groups received the normal professional support from the health services. Mothers are visited daily at home by the community midwives until at least the 10th postpartum day (Central Midwives Board regulations, 1968). Thereafter they are normally visited at least once by the health visitor, who will arrange subsequent visits according to her own asssessment of the mother's needs.

(i) "Study Group"

Mothers were recruited to the study in the postnatal wards by one of the two research sisters (one of whom was the researcher) who were involved in the study. All home visits were thereafter carried out as far as possible by the same sister.

Mothers were visited once by the research sister in the first week following discharge from hospital and thereafter visits were arranged on a fortnightly basis by appointment.

Mothers kept records of the babies' feeding, and this information formed the basis for discussion at each visit. During the visits, mothers were simply given the opportunity to raise problems; no

pressure was brought to bear to persuade them to continue breast feeding. All decisions regarding feeding were made by the mothers themselves. Visits continued every fortnight until the cessation of breast feeding.

(ii) "Control Group"

Mothers in this group were traced through hospital records. Mothers who delivered normal babies and who left hospital breast feeding during the period of recruitment were matched for age, social class, parity and place of residence. These mothers were unaware of any involvement in the study until 24 weeks postpartum, when they were contacted by letter or telephone and asked by the researcher to participate in the study. All mothers agreed to be inverviewed.

(iii) Babies

All babies in the study group were thriving. At the time of interview, two babies in the control group had been admitted to hospital, one with a respiratory infection and the other with failure to gain weight. The other babies in the control group were thriving.

(iv) Classification of "social class"

Mothers were allocated to social class groups I-V on the basis of their husband's occupational rating on the Registrar General's Classification of Social Class (1970).

(v) Statistics

Numbers in social class III and IV were small, so these two groups were combined for the purpose of analysis.

Comparisons between the groups were made using the chi square test.

(i) Comparison between study and control groups (Table 7).

No significant difference was found between the study and control groups in respect of age, parity or social class distribution. The average number of home visits by the health visitor to both groups was 2.7 visits per patient over the 24 week period. The study group received an additional 11.5± 0.5 visits by the research sisters over this period.

(ii) Duration of breast feeding. (Figure 24)

All mothers in the study group continued breast feeding until 12 weeks postpartum. Twenty-four out of the 28 (86%) were still feeding at 24 weeks. This was in contrast to the control group, of whom 11 (21%) had stopped breast feeding by 12 weeks postpartum. The difference in duration of feeding between the two groups was consistent throughout the period of observation, the study group being more successful. The differences were significant at 12 weeks ($p<0.01$) and 20 weeks ($p<0.05$).

(iii) Differences between social class groups in duration of breast feeding (Figure 24).

There was a progressive decrease in continuation rates from social class 1 to social class III and IV. There were no social class V mothers in either group.

No differences were observed between study and control groups in social class I, the continuation rates in both groups being high (study group 91%, control group 83% at 24 weeks). Differences were observed between study and control groups in social class II ($p<0.05$ at 20 weeks) and social classes III and IV ($p<0.05$ at 12 weeks).

TABLE 7 AGE, PARITY, SOCIAL CLASS AND AMOUNT OF HOME SUPPORT IN CONTROL (n = 52) AND STUDY (n = 28) GROUPS

	CONTROL GROUP	STUDY GROUP
AGE (MEAN ± S.D.) YEARS	29 ± 3.7	29 ± 4.3
PARITY:		
PRIMIGRAVID	46%	46%
PAROUS	54%	54%
SOCIAL CLASS:		
I	30%	39%
II	35%	36%
III & IV	35%	25%
VISIT BY HEALTH VISITOR (MEAN ± S.D.)	2.7 ± 1.9	2.7 ± 1.6
EXTRA VISITS	0	11.5 ± 0.5

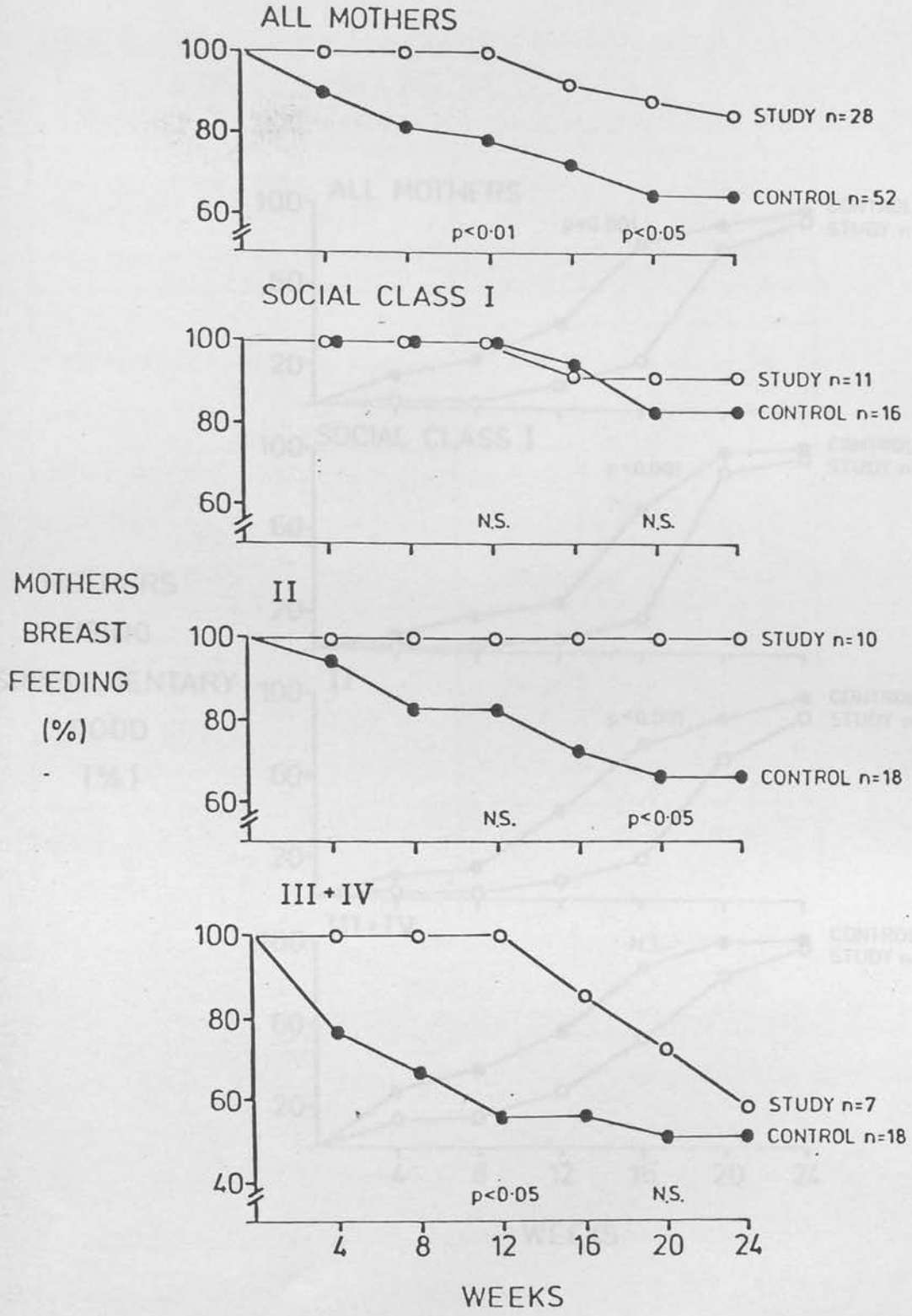

Fig. 24 Study D: Duration of breast feeding in study and control groups, showing (1) all mothers, (2) Social Class I mothers (3) Social Class II mothers, (4) Social Class III and IV mothers.

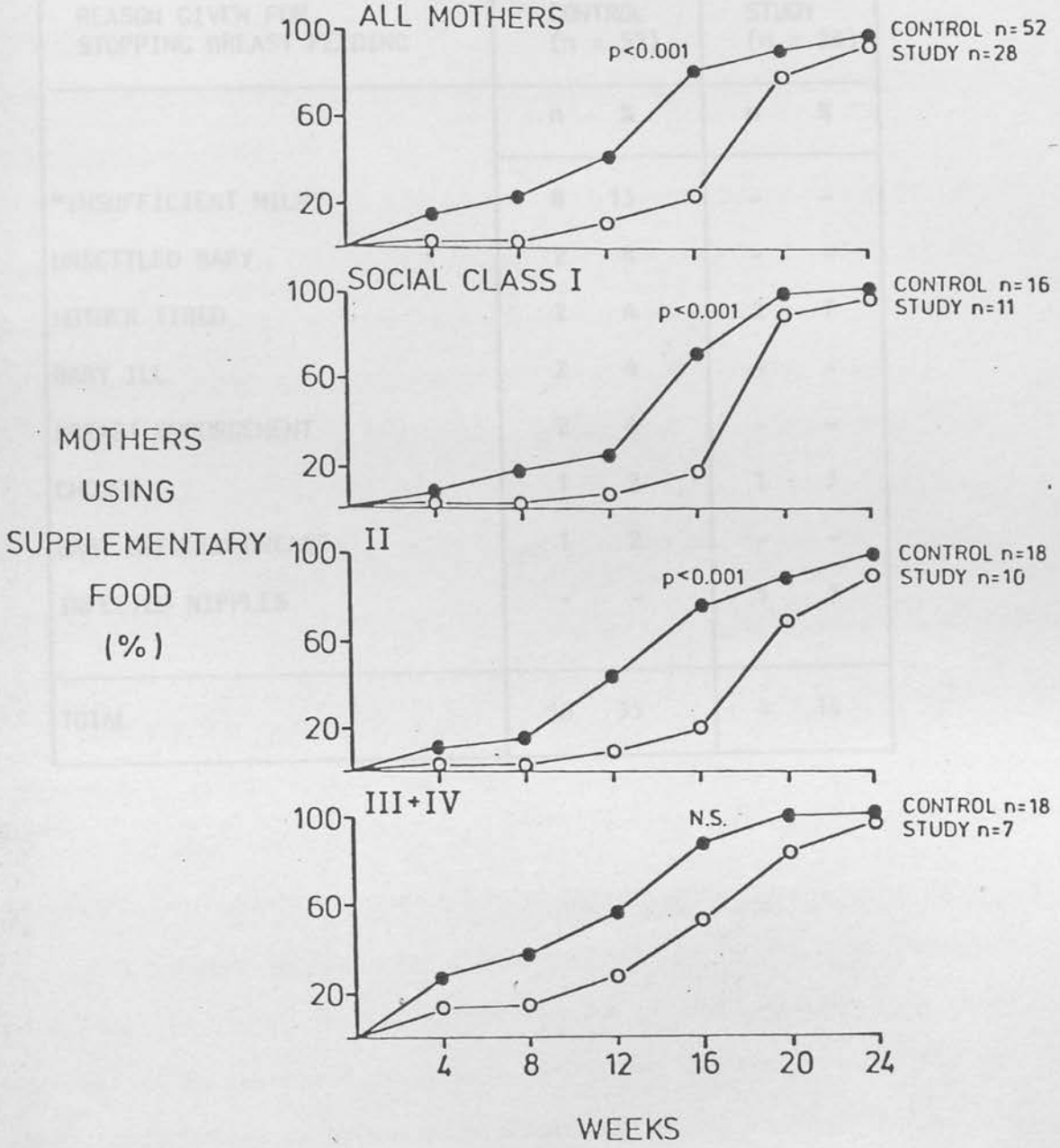

Fig. 25 Study D: Time of introduction of supplementary food in study and control groups, showing (1) all mothers, (2) Social Class I mothers, (3) Social Class II mothers and (4) Social Class III and IV mothers.

TABLE 8 REASON GIVEN BY MOTHER FOR STOPPING BREAST FEEDING IN STUDY AND CONTROL GROUPS

REASON GIVEN FOR STOPPING BREAST FEEDING	CONTROL (n = 52)		STUDY (n = 28)	
	n	%	n	%
"INSUFFICIENT MILK"	8	15	-	-
UNSETTLED BABY	2	4	-	-
MOTHER TIRED	2	4	2	7
BABY ILL	2	4	-	-
BREAST ENGORGEMENT	2	4	-	-
CHOICE	1	2	1	3
BABY REFUSED BREAST	1	2	-	-
INFECTED NIPPLES	-	-	1	3
TOTAL	18	35	4	14

(iv) Introduction of supplementary food (Figure 25)

The time of introduction of supplementary food in the form of either bottles or solids was consistently earlier in the control than in the study group. This difference was most marked at 16 weeks when 83% of the control group were giving supplements compared with 28% of the study group ($p < 0.001$).

(v) Differences between social class groups in time of introduction of supplements (Figure 25).

Both social classes I and II introduced supplements later in the study group than in the control group ($p<0.001$ in both I and II at 16 weeks). Differences were not significant in social classes III and IV.

(vi) Reasons given for stopping breast feeding (Table 8)

Nineteen percent of the control group gave "insufficient milk" or an "unsettled baby" as the major factor for stopping breast feeding. None of the mothers in the study group gave these reasons for stopping breast feeding.

6.4 DISCUSSION

Mothers who were given additional home support in the form of fortnightly visits breast fed their babies for a longer time, introduced supplementary food later and did not stop feeding due to "insufficient milk"

All mothers in the study group continued to breast feed throughout the first 12 weeks. The later introduction of supplementary food seems to reflect an increased confidence with these mothers' own ability to feed their babies on breast milk alone, and it may be that this increased confidence in their own milk supply prevents the feelings of anxiety which develop into the "insufficient milk" complaint.

Due to the experimental nature of this study, it is not possible to fully identify the mechanisms at work within this support system, but mothers in the study group described two factors which they felt to be important.

1. Mothers were visited by the same research sister on each visit, as far as possible. This continuity established a trusting relationship within which problems could be discussed easily. Many reports (Burne, 1976; Clayton et al, 1980; Raphael, 1976) have discussed the importance of continuity of care, not only in postnatal care, but also throughout the antenatal and delivery period (Flint, 1979). Although it is widely recognised to be an important factor, the structure of the existing postnatal services does not always seem to provide consistent contact.

2. Mothers found that the predictable appointment system used was important. Not only was care offered to the mother as opposed to leaving her the responsibility to contact her clinic or her health visitor, but she also knew when this help was available. Orr (1978) found that 72% of the mothers she studied would prefer to know when their health visitor was coming; in contrast to this, she found that 70% of mothers were never given notice of these visits. Orr also suggests another benefit of an appointment system;

> "an appointment system may help to alleviate the problem that the professional relationship is an unequal one which emphasises the consumer's inadequacy and powerlessness"
> (Orr, 1980, p.70)

Tolerance to any unpleasant stimulus is increased by the knowledge that help is available;

> "The mere knowledge that one can exert control...serves to mitigate the debilitating effects of aversive stimuli".
> (Lefcourt, 1976)

Mothers in the study group found that anxiety and even a crying baby were easier to tolerate when they knew that a visit would occur. This suggestion is supported by the findings of Luker (1980). In a study of health visitors' care of the elderly, she found that geriatric patients both coped better with existing problems and developed fewer new problems when visited on a predictable appointment system. Luker termed this beneficial effect "therapeutic anticipation".

It is of interest to note that the mean number of visits by the health visitor to both study and control groups was 2.7. This level of visiting did not appear to be sufficient for mothers in the control group studied. Health visitors do have a broad-based commitment to all fields of preventive care (2.2.2). However, health visitors themselves affirm that maternal and child care is their first priority of care (Wiseman, 1982). In the light of this commitment, the level and organisation of care provided for postnatal women must be questioned. It is recognised that this small experimental study requires to be repeated and expanded. It does, however, suggest some mechanisms which may be of benefit in organisation of postnatal care.

CHAPTER 7

STUDY E: EXAMINATION OF THE PROBLEMS ENCOUNTERED BY, AND CARE OFFERED TO, BREAST FEEDING WOMEN.

METHODS

7.1 INTRODUCTION

The findings from the three studies described in chapters 4, 5 and 6 have indicated that the success of breast feeding is strongly related to environmental factors operating both in hospital and after the mother has returned home, and that the duration of breast feeding can be affected by appropriate management.

It is clear that breast feeding mothers face a number of varied problems and receive different amounts and type of care. There have been few attempts to describe and quantify these problems, or to measure the care given. Such information is essential to allow the formulation of rational and effective management policies.

The remaining chapters of the thesis (Chapters 7, 8 and 9) describe a detailed study (Study E) of 105 breast feeding mothers who delivered their babies in the Simpson Memorial Maternity Pavilion in Edinburgh. The study was designed to examine the following areas:-

1. The number and timing of problems encountered by breast feeding mothers.
2. The type and timing of problems which are most frequently encountered by breast feeding mothers.
3. The relationship of problems with the duration of breast feeding.
4. The relationship of social class with the number, type and timing of problems encountered.
5. Other variables associated with success of breast feeding.
6. The amount and effectiveness of care given to breast feeding mothers by the health services.

7.2 COLLECTION OF DATA

7.2.1 Design of study E and recruitment of mothers

A diagrammatic representation of the plan of Study E is shown in Figure 26. Thirty-five breast feeding women, who were consecutive admissions to each of the three postnatal wards (Wards A,B & C) of the Simpson Memorial Maternity Pavilion were recruited from the hospital records, giving a total of 105 mothers.

Patients attend the Simpson Memorial Maternity Pavilion from a large catchment area covering the area of the Lothians and Borders region. They are allocated to one of the three consultant units in each of which there are 3-4 consultant obstetricians. Allocation to a particular unit depends entirely on the day of the week on which women attend the antenatal clinic. Following delivery, patients are sent to the postnatal ward belonging to the consultant unit to which they are attached. Intention to breast feed was the only selection criteria for this study and so all mothers admitted to the postnatal wards while recruitment was in progress were included, until a total number of 35 mothers was reached on each ward.

The total duration of Study E was 33 weeks. Recruitment started in Ward A in April, 1980 (Figure 26). It took approximately four weeks to recruit 35 women. Recruitment then started on Ward B following a one-week break, and again lasted four weeks. Following a four-week break, recruitment started in Ward C. The total duration of recruitment of the 105 mothers was 17 weeks. The timing of this stage of the study was planned so that all follow-up interviews could take place when the mothers were 12-16 weeks postpartum, and could all be carried out by one researcher.

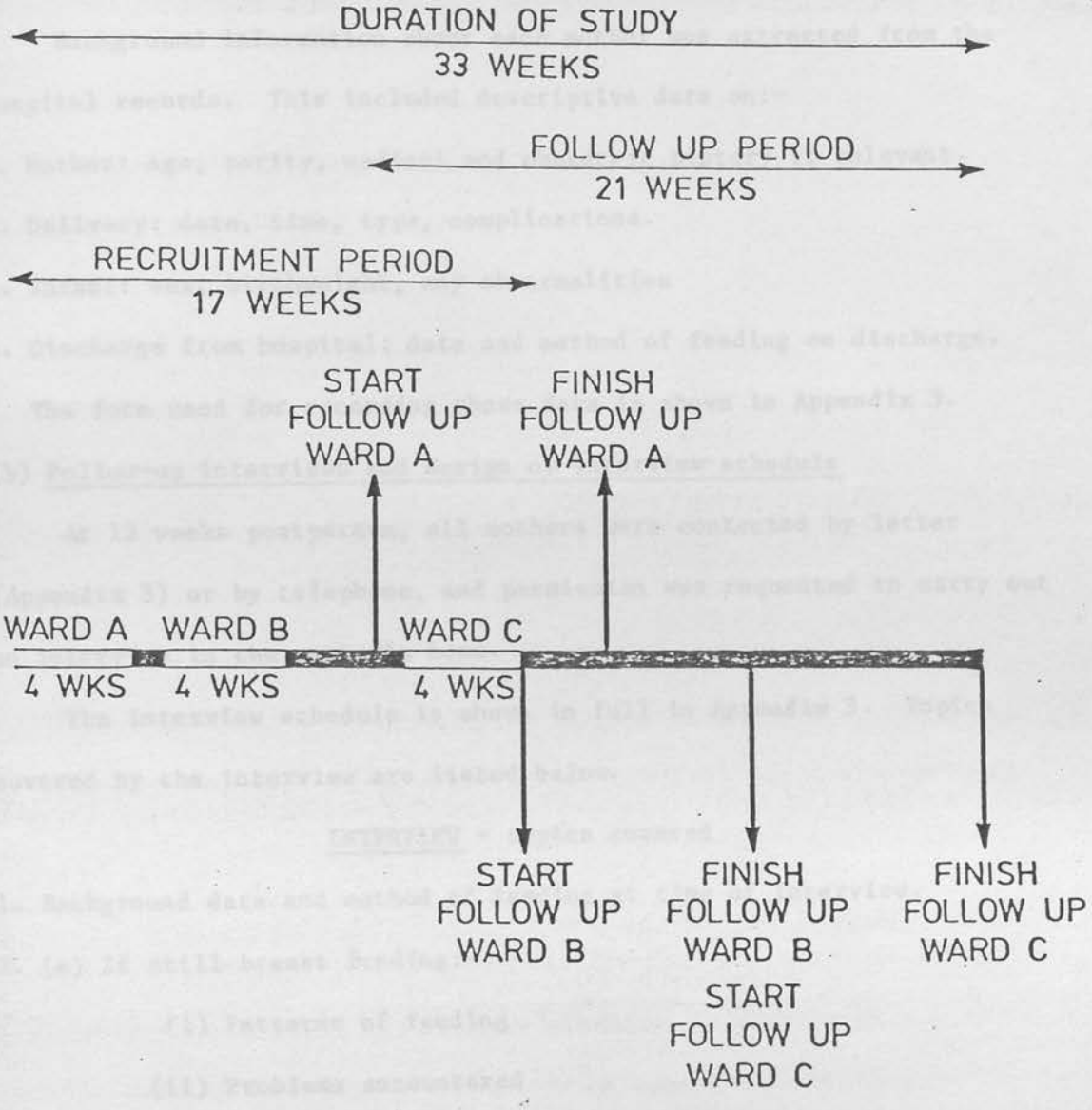

Fig.26 Diagrammatic representation of design of study E (described in 7.2.1).

The interviews took place in the mothers' own home. All visits were completed by November, 1980.

7.2.2 Collection of Data

(a) Hospital Records

Background information about each mother was extracted from the hospital records. This included descriptive data on:-

1. Mother: age, parity, medical and obstetric history if relevant.
2. Delivery: date, time, type, complications.
3. Infant: sex, birthweight, any abnormalities
4. Discharge from hospital: date and method of feeding on discharge.

The form used for recording these data is shown in Appendix 3.

(b) Follow-up interviews and design of interview schedule

At 12 weeks postpartum, all mothers were contacted by letter (Appendix 3) or by telephone, and permission was requested to carry out an interview in the mother's home.

The interview schedule is shown in full in Appendix 3. Topics covered by the interview are listed below.

INTERVIEW - topics covered

1. Background data and method of feeding at time of interview.
2. (a) If still breast feeding:-
   - (i) Patterns of feeding
   - (ii) Problems encountered
   - (iii) Sources of help and advice

   (b) If stopped breast feeding:-
   - (i) Patterns of feeding till stopped
   - (ii) Problems and reasons for stopping
   - (iii) Sources of help and advice
   - (iv) Changes since stopping breast feeding.

3. Use and availability and usefulness of professional services.

(i) Community midwife

(ii) Child health clinic

(iii) Health visitor

(iv) G.P.

4. Other sources of help, advice or discouragement.

5. Household organisation/problems.

6. Influence of outside work.

7. Previous breast feeding history.

8. Feelings about breast feeding.

9. General health/mood/tiredness state.

10. Drugs taken/menstrual and contraceptive history.

The interview was semi-structured and was intended to give the mother the opportunity to describe any problems in detail. The timing of important events in relation to problems was of particular interest.

7.2.3 Design of Interview Schedule

The structure of the interview and the type of questions asked were related to the type of analysis which was to be carried out.

The area of investigation required an approach in which both qualitative and quantitative data were investigated. Group trends, amenable to quantitative, statistical analysis as well as the experiences of individual women, amenable to a qualitative analysis, were of interest. The interview schedule had to be flexible enough to allow for both kinds of analysis.

Basic demographic data, such as the age of the baby, were easily pre-coded. Pre-coding of answers to open-ended questions was not carried out due to the risk of losing specific information as a result of poorly fitting categories (Oppenheim, 1979). Probes and guides by the interviewer were often necessary to clarify the timing of events. The mother's account was then checked and amplified by a series of specific questions. These specific questions checked back on both the validity and the reliability of the previous answers as well as helping the mother's memory by recalling specific events (Moser & Kalton, 1979). The recall of the mothers appeared to be helped by asking specific questions. Bynner & Stribley (1979) describe two other factors which affect the accuracy of answers; the length of time since an event took place and the event's importance to the respondent. It was considered that 12 weeks was a useful length of time, particularly as previous interviews of similar groups of women had shown that mothers have a very vivid memory of events relating to their baby in their early postpartum weeks. The interview relied to some extent on the assumption that events which the mother did not recall would not be of fundamental importance to her (Glaser & Strauss, 1967); however the use of specific questions probed areas which she might have overlooked (Brown, 1973).

The events described by the mother were checked back by the researcher and recorded in a time sequence. Occasional verbatim comments were recorded.

Interview schedules were pre-tested with five women. Some questions were altered as a result of this pre-test. The amended schedule was then pre-tested with a further five women.

Appendix 2 presents a discussion of some of the difficulties encountered in the course of these interviews.

ANALYSIS OF DATA

The combination of the qualitative and quantitative approaches resulted in analysis similar to that described by Graham & McKee (1980).

1. Quantitative analysis of aspects such as social class, age, number of clinic visits and age of stopping breast feeding was carried out using the Edinburgh University computing facilities. Statistical analysis was performed using SPSS package (Nie et al, 1975); statistics used included frequencies and cross tabulations, chi-square and t-tests of significance.

2. Other material was examined and sorted, and each individual mother had a profile of her results entered on a record card. This card divided her postnatal period into time blocks of one week. It was considered that smaller blocks would be too detailed for accurate recall and would therefore be subject to error. Larger time blocks might lose the importance of the time sequence of events.

The data were sorted and categorised according to type and timing of problems or advice. Some of these data were counted and are presented in Chapter 8. No statistical tests were applied to these data. Other qualitative data are presented in Chapter 9.

Combination of these two methods of analysis resulted in the quantitative data being explored in terms of traditional social and demographic measures; statistical tests were applied to many measures. The advantages of using both these approaches are that they complement each other and also that quantitative findings are comparable with other, less detailed studies. However, difficulties are inherent in combining these two approaches. The purely qualitative approach presented as case studies in Chapter 9, is more flexible and retains more of the mother's own experience, while the quantitative analysis requires the labelling and condensing of categories depending on the researcher's interpretation.

7.3.1 Categorisation of problems

Problems were categorised in a way which attempted to retain the variety of physical, emotional and other influences which women reported in the first 12 postpartum weeks. Problems were first listed in 24 main categories which included maternal health, infant behaviour, and home environment.

These 24 categories are listed below.

"Not enough milk"

Infant in special care nursery

Infant jaundiced

Infant unsettled/crying, or feeding frequently

Infant sick

Infant having colic, or "wind"

Worry about infant weight gain

Difficulty with getting baby to take the breast

Nipple problems

Maternal tiredness

Breast engorgement

Maternal illness

Mastitis or abscess

Embarrassment

Feeling "down" or "depressed"

Feelings of inconvenience

Maternal tension and anxiety

Dislike of breast feeding

Difficult behaviour of siblings

Excess visitors

Return to work

Husband away

Husband ill

"Other": including maternal weight loss, mother-in-law being demanding, marital stress, and other factors which were only mentioned by one or two women.

These 24 categories were further condensed into five broad groups in order to simplify the handling and presentation of the data. Table 9 shows the allocation of each of the 24 categories into the five broad headings.

The 24 categories divided easily into "infant", "physical", "emotional" and "environmental" groupings. Any report of "insufficient milk" was retained as a separate grouping. Problems listed initially in the "other" category were re-allocated individually to the appropriate large grouping.

"Infant" problems included such complaints as the baby being sick, or crying frequently, or being admitted to the Special Care Unit.

"Physical" problems included any report by the mother of physical difficulties such as sore nipples, perineal pain, tiredness or breast engorgement.

"Emotional" problems covered any complaint of embarrassment, and dislike, in addition to mood problems and anxiety.

"Environmental" problems included reports of difficult behaviour of siblings, or too many visitors.

Problems reported in each postnatal week were counted. A total "problem score" for each week was calculated by dividing the total number of reported problems by the number of women breast feeding in that week.

TABLE 9 DIVISION OF 24 "PROBLEM" CATEGORIES INTO FIVE BROAD GROUPINGS

BABY PROBLEMS	MOTHER - PHYSICAL PROBLEMS	MOTHER - EMOTIONAL PROBLEMS	ENVIRONMENTAL PROBLEMS	"INSUFFICIENT MILK"
Baby in special care unit	Difficulty with "fixing" baby	embarrassed	other children difficult	This problem was retained as a separate category. (see 7.3.1)
Baby jaundiced	Nipple problems	"depressed"	too many visitors	
Baby unsettled or feeding frequently	tired	inconvenient	back to work	
Baby sick	breast enlargement	tense or anxious	husband away	
Wind or colic	mother sick	disliked breast feeding	husband ill	
Worry about weight gain	mastitis or abscess			

The occurrence of individual problems or groups were calculated as a percentage of women reporting problems per week.

7.4 PRESENTATION OF THE DATA

The results of this study are presented in Chapter 8. Following an initial description of the study population, the analysis of the data is presented in six sections. The sections are described below:-

Section 8.2.1

This section presents a descriptive analysis of problems reported by breast feeding mothers. These data result from analysis by computer and of the card profiles as described in 7.3. A description of the time at which women stopped breast feeding, and the main reasons given by mothers for stopping, is included.

Section 8.2.2

This section presents the five problem categories as described on p. 107 together with a description of the major components of each category.

Section 8.2.3

In order to examine the relationship of problems with the success of breast feeding, mothers were divided into four groups according to the duration of their breast feeding. These groups comprised:-

1. Mothers who continued to breast feed beyond 12 weeks postpartum (n=43).
2. Mothers who discontinued breast feeding in the first four weeks (n=26).
3. Mothers who discontinued breast feeding after four weeks, and up to eight weeks (n=21).
4. Mothers who discontinued breast feeding after eight weeks, and up to twelve weeks (n=7).

The mothers in group 2 were excluded from this analysis because it was difficult to quantify accurately the frequency of their problems, due to the fact that the number of mothers fell rapidly at each stage of the analysis as they discontinued breast feeding. In order to keep "n" constant, this analysis was confined to groups 1,3 and 4 in the weeks prior to their discontinuation. Data are therefore presented for weeks 1-4 for group 2, and weeks 1-8 for group 3.

Section 8.2.4

The outcome of breast feeding and the number and type of problems encountered is analysed by social class.

Part A in this section is based on social class as defined by partner's occupation using the Registrar General's Classification of Occupations (1970). These results are comparable with most other studies of social class which use partner's social class. Analysis of social class differences is strongly affected by the more rapid discontinuation rate among mothers in lower social classes; "n" changes constantly across the 12 week period examined. To control for this bias, women in social classes I & II (group A) and social classes III, IV & V (group B) who continued to breast feed were also examined, resulting in constant numbers (group A n=35, Group B n=19).

Part B presents a further analysis using mother's occupation as the basis of classification.

Section 8.2.5

This section presents an analysis of some variables, apart from social class, which may be related to success in breast feeding. The variables analysed were maternal age, parity, previous breast feeding experience, timing of the decision to breast feed, reasons for choosing to breast feed, reasons for enjoyment of breast feeding, flexible or scheduled feeding, pattern of night waking in the infant, sex of the

baby, whether or not the pregnancy was planned and whether the mother described the baby as "good" or "difficult".

Section 8.2.6

This section quantifies the care offered to mothers by the health services and mothers' reactions to this care. The distribution of care across the population is examined.

7.5 STATISTICS

All statistical calculations were carried out either by Students t-test or by chi-square. Results were considered to reach significance when $p<0.05$, and to be highly significant when $p<0.001$.

Note:

The numbers of the specific question or questions on the interview schedule (Appendix 3) which relate to the data presented are shown at the appropriate point throughout the presentation of the data, e.g. (Question 3(c), Section A).

CHAPTER 8

STUDY E - RESULTS AND DISCUSSION

8.1 INTERVIEWS AND DESCRIPTION OF POPULATION

(i) Interviews

Table 10 shows the rate of follow-up for the 105 women recruited to the study. Ninety-seven women were interviewed. Three women had emigrated; all three of these women completed and returned a shortened postal questionnaire (Appendix 3). One woman was undergoing hospital treatment for postnatal depression and was reluctant to be interviewed; she did however discuss duration of feeding by telephone.

The remaining four women who were not interviewed comprised two who refused permission for interview and two women who proved impossible to contact despite letters and visits.

Data regarding duration of feeding and social class were therefore available for 101 (96%) of the 105 women. Computer analysis did not include 2 women who had twins; they were included in qualitative analysis.

The mean ($\pm$ S.E.) age of the baby at time of interview was 14.3 weeks, $\pm$ 0.35. Time taken for interview ranged from 25 minutes to 2 hours, depending on the number and type of problems to be discussed. The average duration of interview was 65 minutes.

(ii) Description of study population

Clinical characteristics of mothers and babies are presented in tables 11 and 12 respectively. Because the mothers and babies were recruited consecutively, they reflected the general distribution of breast feeding women in the area served by the hospital. Social class distribution is shown in Table 13 for both maternal and paternal occupation.

TABLE 10 RATE OF FOLLOW-UP FOR HOME INTERVIEWS

	NO.	%
COMPLETE HOSPITAL DATA	105	100
REFUSED FOLLOW-UP	2	2
UNABLE TO CONTACT	2	2
TELEPHONE CONTACT ONLY	1	1
POSTAL QUESTIONNAIRE	3	3
MULTIPLE BIRTHS	2	2
COMPLETE FOLLOW-UP DATA	97	93

TABLE 11 MATERNAL CLINICAL CHARACTERISTICS (n = 103)

MATERNAL AGE(YEAR) MEAN ± SD	PARITY	MARITAL STATUS	ONSET OF LABOUR	TYPE OF DELIVERY	PREVIOUS BREAST FEEDING EXPERIENCE
27 ± 5	47 PRIMI-GRAVID	101 MARRIED	78 SPON-TANEOUS	75 SVD	50 NEVER FED PREVIOUSLY
RANGE 16-39	56 PAROUS	2 SINGLE	17 INDUCED	16 FORCEPS	
			8 ELECTIVE SECTION	8 ELECTIVE SECTION	3 PREVIOUS BOTTLE FED
				4 EMERGENCY SECTION	13 BREAST FED 4 WEEKS
					37 BREAST FED 4 WEEKS

TABLE 12 BABIES CLINICAL CHARACTERISTICS

	GESTATION (WEEKS)	BIRTH WEIGHT (kg)	APGAR AT BIRTH	APGAR AT 5 MINS.	WEIGHT ON DAYS-6 (kg)	SEX OF BABY
	n = 101	n = 103	n = 100	n = 100	n = 90	
MEAN	39.3	3.32	8	8.9	3.2	51
+ - SD	± 1.7	±0.51	±1.5	±0.4	± 5	GIRLS
RANGE	34-42	1.7-4.6	1.9	6-9	1.7-4.4	52 BOYS

TABLE 13 SOCIAL CLASS DISTRIBUTION BY OCCUPATIONAL CLASSIFICATION OF PARTNER AND OF MOTHER

OCCUPATIONAL CLASSIFICATION	PARTNER	MOTHER
I	22	2
II	25	34
III N	16	45
III M	24	6
IV	10	7
V	1	-
ARMY	1	-
UNEMPLOYED	2	2
STUDENT	-	5
UNABLE TO CLASSIFY	-	2
TOTAL	101	103

8.2.1 Duration of breast feeding, and the number and timing of problems reported.

(i) Success of breast feeding

The number of women who were breast or bottle feeding at 12 weeks postpartum is shown in Table 14. Fifty-three mothers (54%) were still breast feeding, although 18 (18%) of these had introduced either supplementary bottles or solids. The rate of discontinuation of breast feeding per week is shown in Figure 27. Figure 28 shows that 50% of women who stopped breast feeding did so before 7 weeks.

(ii) Introduction of supplements

The time of giving first supplements in the form of either bottles or solids is shown in Table 15. Forty-nine percent of women had introduced bottles before 12 weeks and 16% had introduced solids. Among the mothers who were still breast feeding at the time of interview, 6% gave extra bottles and 8% gave solids before 12 weeks. By contrast, among the mothers who had stopped breast feeding at the time of interview, 100% were giving bottles (73% having started before 5 weeks) and 31% were giving solids before 12 weeks.

Table 16 shows the reasons for introducing supplements given by mothers who were still breast feeding at the time of interview (Question 3(c), Section A). For mothers who had stopped breast feeding the main reason for introducing supplements was often intricately involved with the reason for stopping breast feeding and this interrelationship is discussed further in Chapter 9.

(iii) Feelings about stopping breast feeding

Sixty-three percent of the women reported feeling upset or guilty about stopping breast feeding before the time of interview

TABLE 14 METHOD OF FEEDING AT 12 WEEKS (n = 98)

METHOD OF FEEDING	NUMBER
FULLY BREAST FEEDING	35
PARTIALLY BREAST FEEDING	18
BOTTLE FEEDING	45
TOTAL	98

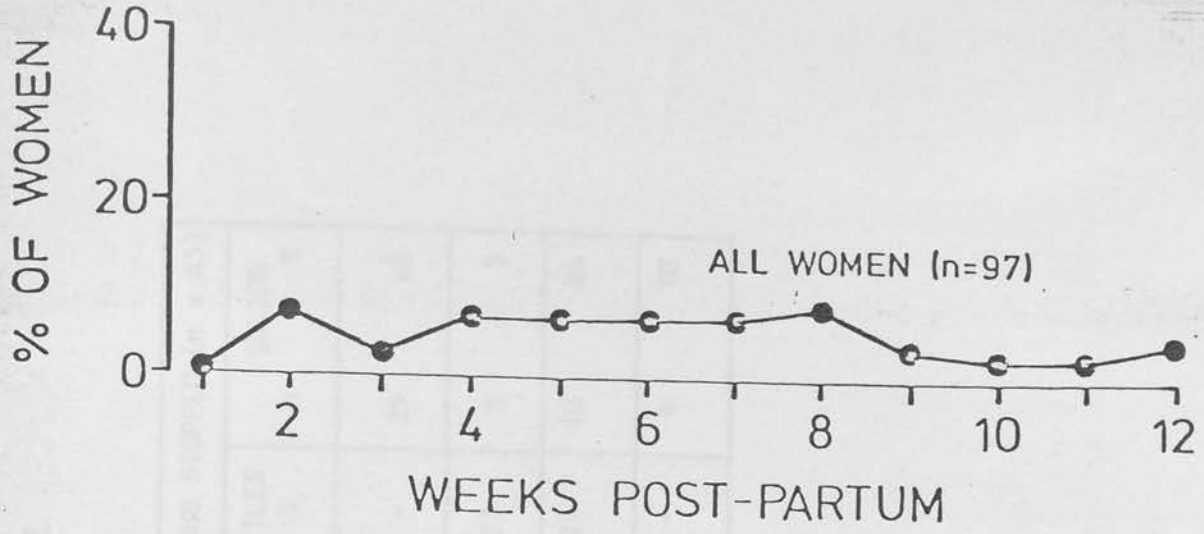

Fig. 27 Study E: Rate of discontinuation of breast feeding per week; all women (n = 97).

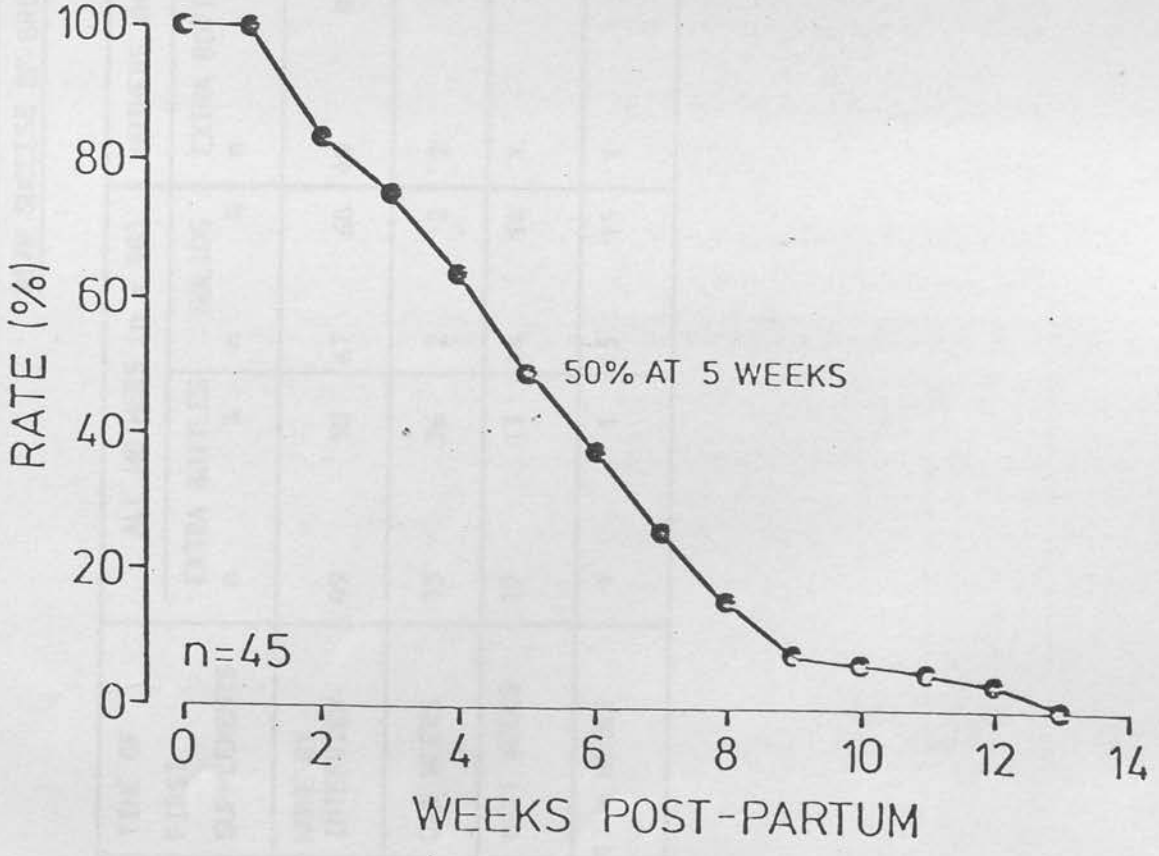

Fig. 28 Study E: Time of discontinuation of breast feeding for those women who stopped (n = 45)

TABLE 15 TIME OF INTRODUCTION OF SUPPLEMENTS (EITHER BOTTLES OR SOLIDS) CROSS-TABULATED WITH SUCCESS OF BREAST FEEDING

TIME OF FIRST SUPPLEMENTS	ALL MOTHERS (n = 98)				MOTHERS WHO CONTINUED (n = 53)				MOTHERS WHO STOPPED (n = 45)			
	EXTRA BOTTLES		SOLIDS		EXTRA BOTTLES		SOLIDS		EXTRA BOTTLES		SOLIDS	
	n	%	n	%	n	%	n	%	n	%	n	%
NONE BY INTERVIEW	49	50	67	68	49	92	38	72	-	-	29	64
0-5 WEEKS	35	36	2	2	2	4	-	-	33	73	2	5
6-11 WEEKS	13	13	14	14	1	2	4	8	12	27	10	26
12 + WEEKS	1	1	15	15	1	2	11	21	-	-	4	10

TABLE 16 MOTHER'S REASON FOR GIVING SUPPLEMENTS (EITHER BOTTLES OR SOLIDS) WHILE CONTINUING TO BREAST FEED

REASON FOR SUPPLEMENTS	EXTRA BOTTLES (n = 4)	SOLIDS (n = 14)
INSUFFICIENT MILK	3	1
UNSETTLED BABY	1	5
TO HELP NIGHT SLEEP	-	3
ADVISED BY HEALTH STAFF	-	5

TABLE 17 MOTHERS' REPORTS OF FEELINGS ABOUT DISCONTINUING BREAST FEEDING (n = 45)

MOTHERS' REPORTED FEELINGS	n	%
UPSET/GUILTY	28	63
RELIEVED	12	27
OTHER	4	9
UNSURE	1	1
TOTAL	45	100

(Question 13, Section B, Table 17) and 87% said that they had not wanted to stop. Only 13% stopped breast feeding through choice. Twelve women (27%) said they felt relieved, even though they may not have wanted to stop.

(iv) Reasons given for stopping breast feeding

Table 18 shows the reasons given by women for finally stopping breast feeding (Question 8, Section B). These reasons are the final cause of stopping as the mother reported it, and do not include any other associated factors. Figure 29 illustrates the time at which women experienced these difficulties and stopped breast feeding. Women stopping before five weeks (n=21) complained of a predominance of breast problems, such as cracked nipples, engorgement (48%), whilst for those stopping between five and eight weeks (n=18) "not enough milk" was the main reason (44%), followed by tiredness (28%).

(v) Amount of problems associated with breast feeding

Problems associated with breast feeding were analysed as described in Chapter 7.3. Figure 30 shows the total problem score for women in the first 12 weeks postpartum. A peak rate of problems occurs in weeks 2-3, followed by a gradual fall. The mean number of problems per woman remains above 1.5 until week 12.

(vi) Change in baby's behaviour after stopping breast feeding

Mothers who had stopped breast feeding were asked about any change in the baby's behaviour following the change from breast to bottle (Question 14, Section B). Table 19 shows that although 40% reported that the baby became more settled, a further 38% reported no change, and 18% reported that the baby became less settled. Thus 66% of the mothers experienced no benefit in terms of improvement in baby's behaviour after stopping breast feeding.

TABLE 18 REASON GIVEN BY MOTHER FOR STOPPING BREAST FEEDING (n = 45)

REASON GIVEN FOR STOPPING BREAST FEEDING	No	%
NOT ENOUGH MILK	14	31
BREAST PROBLEMS	12	27
MOTHER TIRED OR SICK	8	18
BABY SICK	5	11
UNSETTLED BABY	3	7
WANTED TO STOP	3	6
TOTAL	45	100

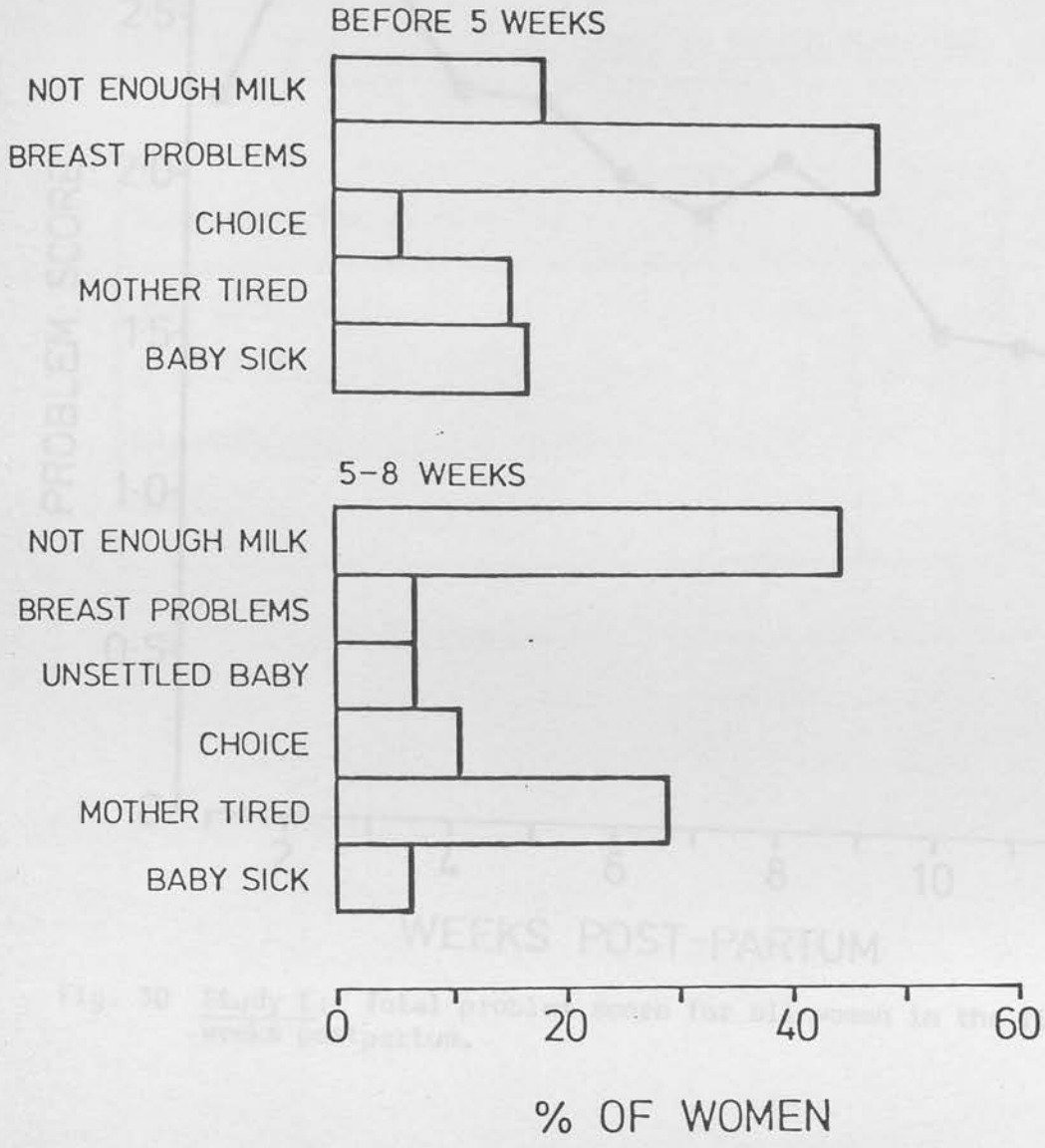

Fig. 29 Study E: Reason given by mother for discontinuation of breast feeding before 5 weeks, and 5-8 weeks.

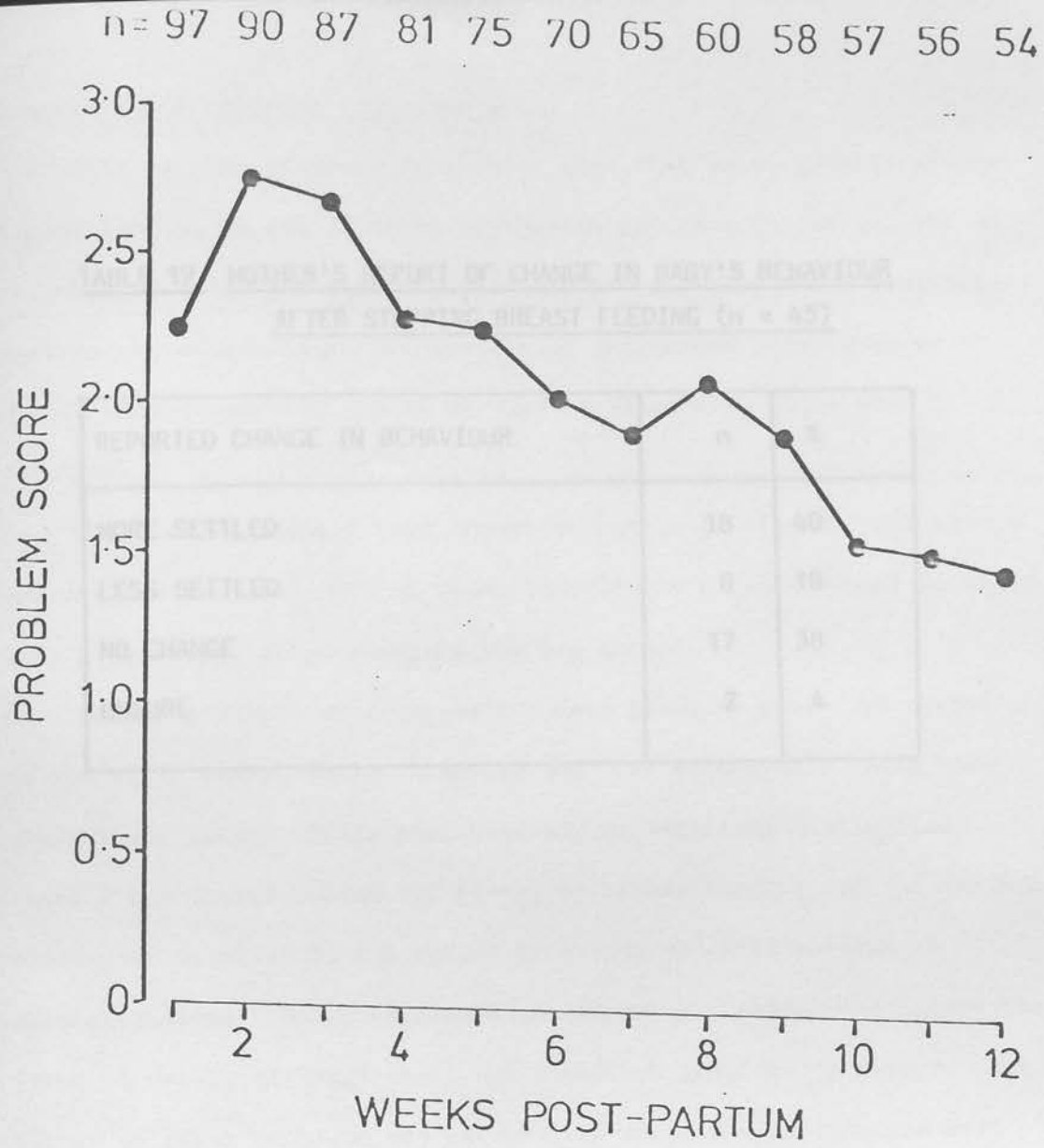

Fig. 30 Study E: Total problem score for all woman in the first 12 weeks postpartum.

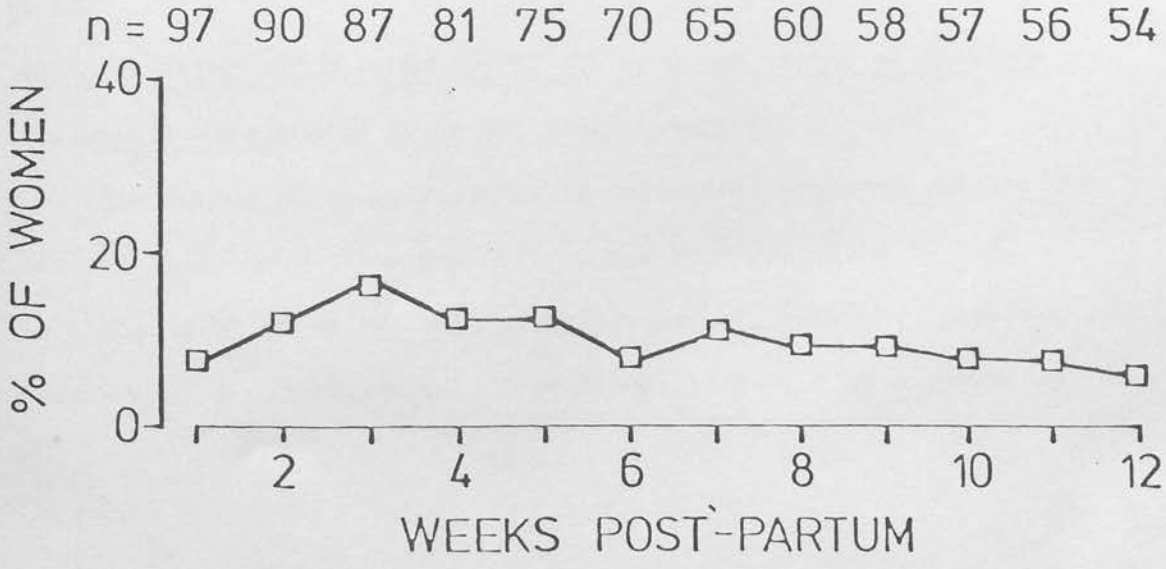

Fig. 32 Study E: Incidence of feelings of "insufficient milk" for all women in the first 12 weeks postpartum.

TABLE 19 MOTHER'S REPORT OF CHANGE IN BABY'S BEHAVIOUR AFTER STOPPING BREAST FEEDING (n = 45)

REPORTED CHANGE IN BEHAVIOUR	n	%
MORE SETTLED	18	40
LESS SETTLED	8	18
NO CHANGE	17	38
UNSURE	2	4

This section presents data which show that women usually stopped breast feeding in the 12 weeks postpartum not through choice, but in response to problems, and many felt upset and guilty about stopping. Mothers who discontinued breast feeding introduced extra bottles or solids more frequently and at an earlier stage than those who continue.

Mothers who changed from breast to bottle feeding did not always resolve the problem; 66% of women experienced no improvement in their baby's behaviour after changing feeding method.

Breast problems were the main reason given by women for stopping in the early weeks, while tiredness and "not enough milk" were more predominant later. There was, however, an important distinction between the stated reason for giving up breast feeding and the factors which were involved in the series of events which culminated in discontinuation. Women continued to encounter problems throughout the first 12 weeks, although there was a peak of problems in week 2. The nature of these problems are categorised in more detail in the next section.

8.2.2

Categorisation and description of the type and timing of problems most frequently encountered by breast feeding mothers

The method of categorisation of individual problems and how the time of their occurrence was defined has been described in 7.3.

Figure 31 shows the time of occurrence of "infant", "physical", "emotional" and "environmental" problems, presented as a percentage of

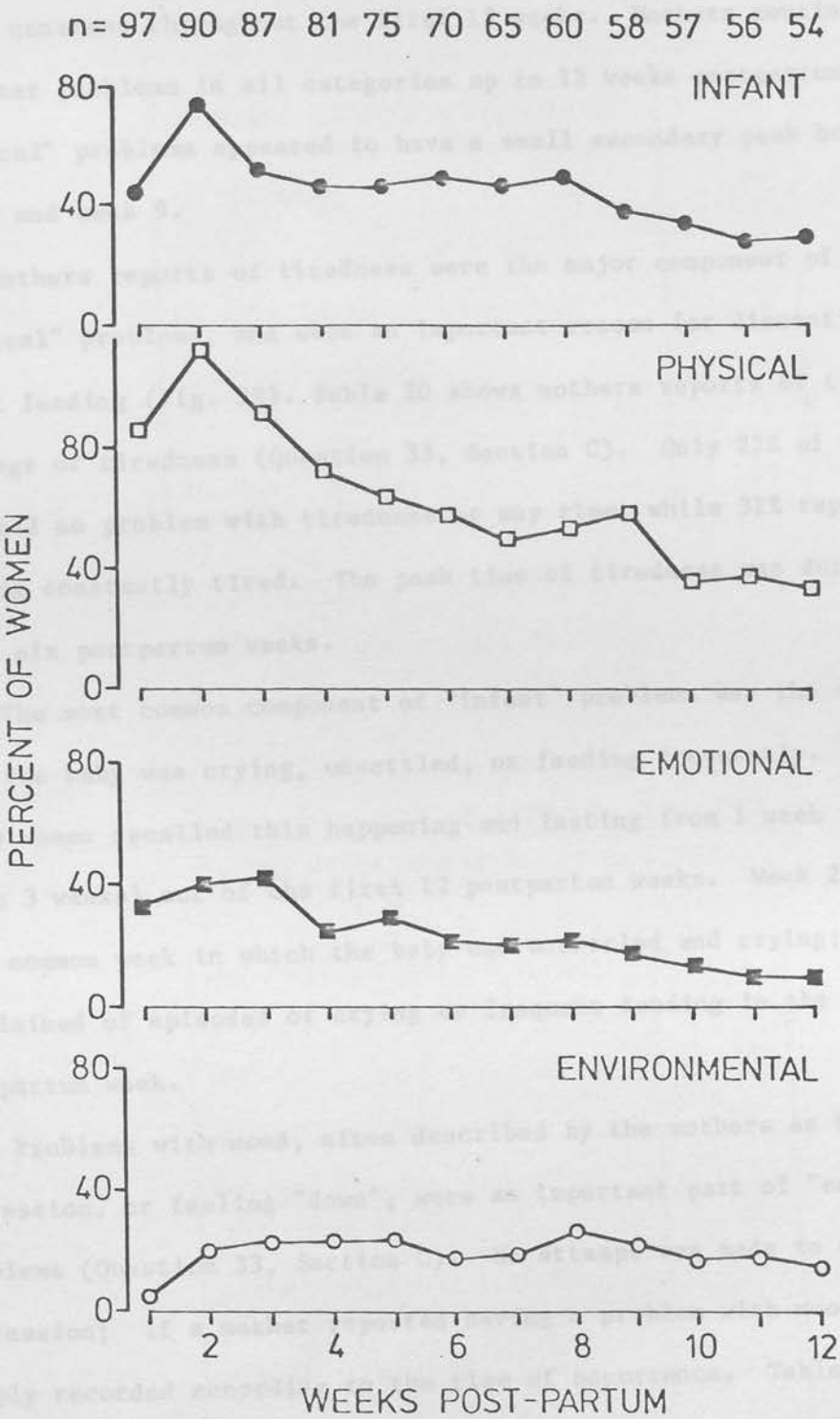

Fig. 31 Study E: Incidence of infant, physical, emotional and environmental problems for all women in the first 12 weeks postpartum.

problems per woman, per week. "Infant", "physical" and "emotional" problems reached a peak in week 2, followed by a gradual decrease throughout the postnatal weeks. "Environmental" problems remained fairly constant throughout the first 12 weeks. Mothers continued to encounter problems in all categories up to 12 weeks postpartum. "Physical" problems appeared to have a small secondary peak between week 7 and week 9.

Mothers reports of tiredness were the major component of the "physical" problems, and were an important reason for discontinuing breast feeding (Fig. 29). Table 20 shows mothers reports of timing of feelings of tiredness (Question 33, Section C). Only 22% of women reported no problem with tiredness at any time, while 31% reported feeling constantly tired. The peak time of tiredness was during the first six postpartum weeks.

The most common component of "infant" problems was the complaint that the baby was crying, unsettled, or feeding frequently. Fifty-nine (61%) women recalled this happening and lasting from 1 week to 10 weeks (mean 3 weeks) out of the first 12 postpartum weeks. Week 2 was the most common week in which the baby was unsettled and crying; 40 women complained of episodes of crying or frequent feeding in the second postpartum week.

Problems with mood, often described by the mothers as feelings of depression, or feeling "down", were an important part of "emotional" problems (Question 33, Section C). No attempt was made to measure depression; if a mother reported having a problem with mood, this was simply recorded according to the time of occurrence. Table 21 shows mothers' reports of mood in the first 12 weeks. Although 58% reported feeling predominantly either "happy" or having no mood problems, 26% recalled having a mood problem in the first 6 weeks, while 15% felt

TABLE 20 MOTHERS' REPORTS OF PROBLEMS WITH TIREDNESS IN THE FIRST TWELVE WEEKS (n = 85)

MOTHERS' REPORTS OF TIREDNESS	n	%
NO PROBLEM	19	22
INITIAL PROBLEM (0-6 WEEKS)	36	42
LATER PROBLEM (7-12 WEEKS)	4	5
CONSTANT PROBLEM	26	31
TOTAL	85	100

TABLE 21 MOTHERS' REPORT OF PROBLEMS WITH MOOD IN THE FIRST TWELVE WEEKS (n = 85)

MOTHERS' REPORTED FEELINGS	n	%
HAPPY	22	26
NO PROBLEM WITH MOOD	27	32
INITIAL PROBLEM WITH MOOD (0-6 WEEKS)	22	26
LATER PROBLEM WITH MOOD (7-12 WEEKS)	1	1
CONSTANT PROBLEM	13	15
TOTAL	85	100

they had a constant problem throughout the 12 weeks.

In contrast to the other groups, no single problem emerged as predominant in the "environmental" group of problems. The many and varied problems included illness or absence of a husband, difficulties with older children, and an excess number of visitors.

Figure 32 shows the timing of feelings of "not enough milk" reported by women. There was a slight peak in reports in week 3, the week after the peak in other problems. Otherwise, reports of "not enough milk" remained at a constant level throughout the first 12 weeks.

Summary and Discussion - Section 2

The data presented in this section show that breast feeding is associated with a wide variety of problems, so that many mothers found breast feeding difficult. Particularly common problems were maternal feelings of extreme tiredness and difficulties associated with crying and unsettled babies. In addition, an important minority of mothers experienced adverse mood changes during the early postpartum period. Most problems reached a peak level in week 2, and all remained at a relatively high level throughout the first 12 postpartum weeks. These various problems may have contributed in an important way to mothers feeling that they had insufficient milk to continue breast feeding.

8.2.3

The relationship of problems with the duration of breast feeding.

The occurrence of problems recalled by women in the four week period before they discontinued breast feeding was examined. For the purposes of this analysis, mothers who stopped breast feeding were divided into three groups as described in 7.4. Problem scores were calculated as described in 7.3.

Figure 33 shows the mean total problem score per woman per week for groups 1, 3 and 4. All groups have an increase in reported problems in week 2, similar to the increase described in 8.2.3. Women who continued to breast feed then reported a drop in the mean number of problems while groups 3 and 4 reported a rise in the mean number of problems in the weeks immediately prior to discontinuation of breast feeding. It is of interest to note the lower reported rate of initial problems followed by an increase in week 8 among women who stopped breast feeding after 8 weeks.

Individual problem categories are shown in Figure 34 for the same groups, and reported feelings of "insufficient milk" in Figure 35. Women who stop breast feeding after 8 weeks had a lower initial reported number of "infant" and "physical" problems than either of the other two groups; this was followed by an increase in week 8.

There appeared to be an increased incidence of "emotional" problems reported in the weeks immediately prior to stopping breast feeding. The problem rate was higher in weeks 2-4 for women in group 3 and women who stopped after week 8 showed a marked increase in weeks 7 and 8.

"Environmental" problems were reported to be greater initially (weeks 1 and 2) in women who stopped breast feeding in weeks 5 - 8.

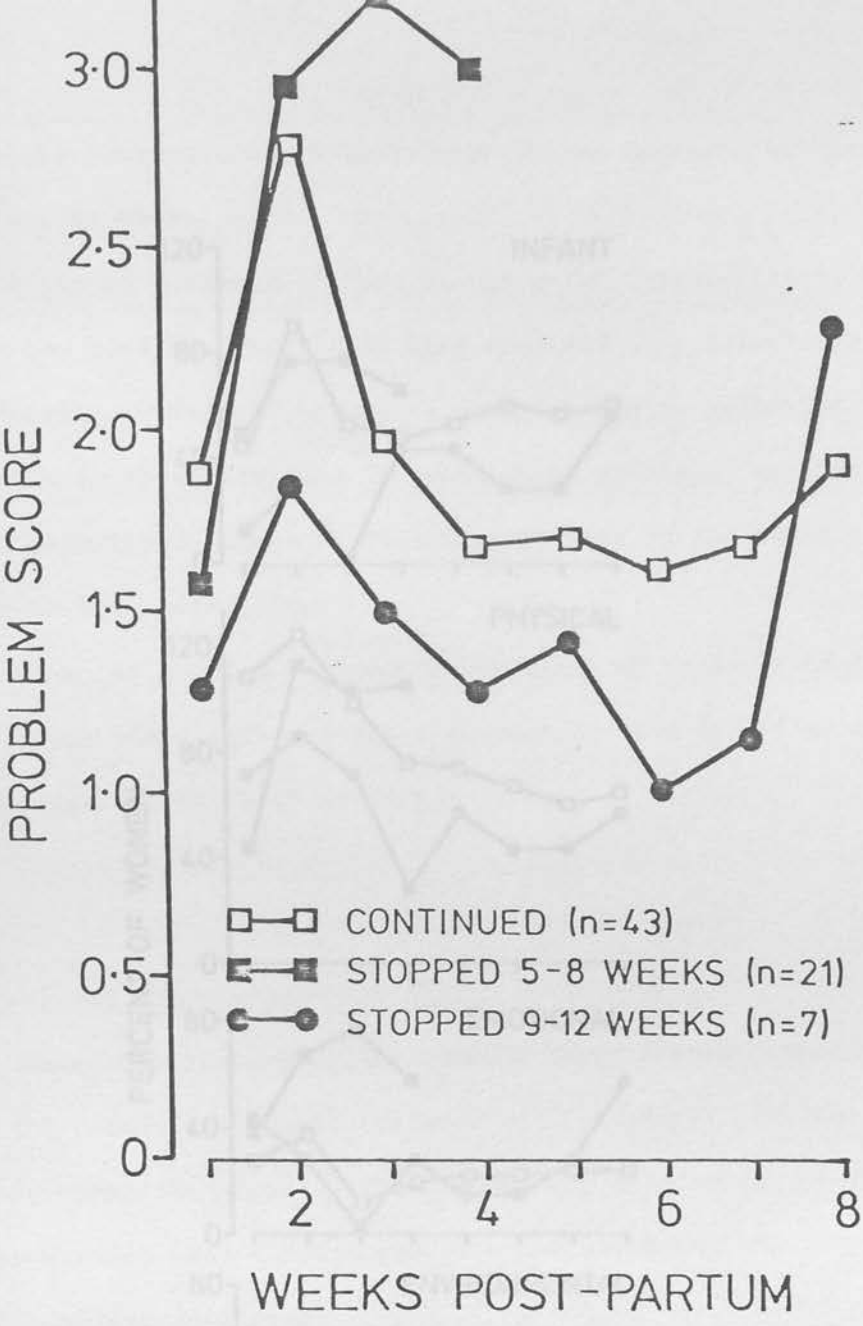

Fig. 33 Study E: Total problem score for women in groups 1, 3 and 4 (see Chapter 7) in the first 8 weeks postpartum.

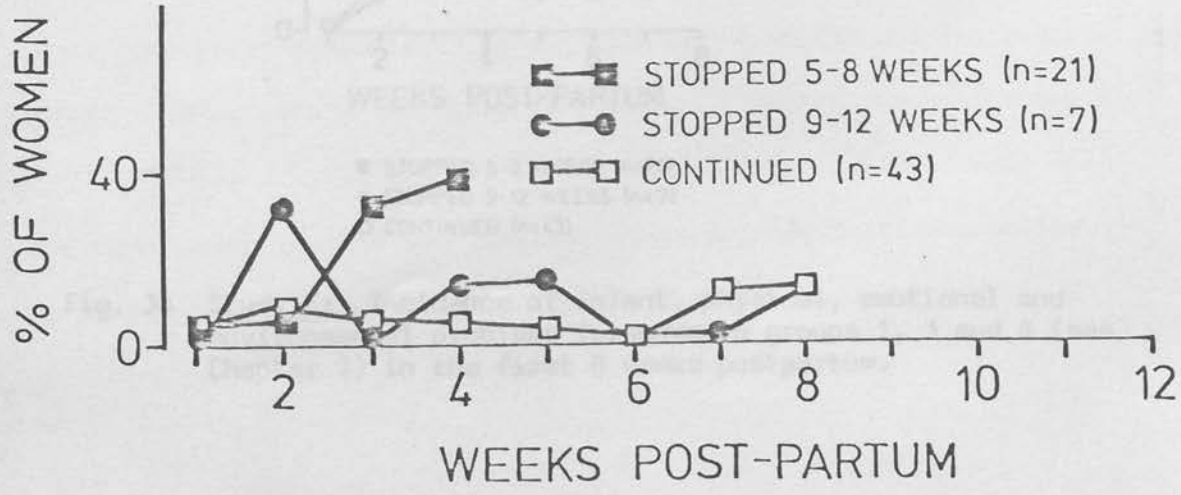

Fig. 35 Study E: Incidence of feelings of "insufficient milk" for women in groups 1, 3 and 4 (see Chapter 7) in the first 8 weeks postpartum.

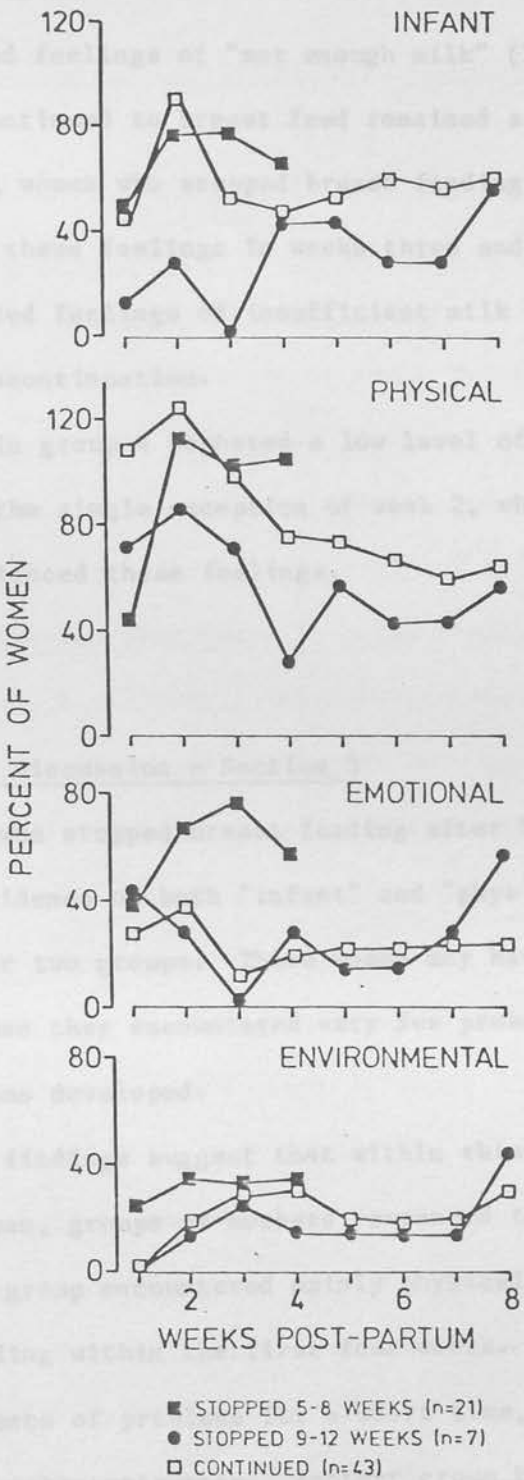

Fig. 34 Study E: Incidence of infant, physical, emotional and environmental problems for women in groups 1, 3 and 4 (see Chapter 7) in the first 8 weeks postpartum.

Women who stopped after 8 weeks reported an increase in "environmental" problems in week 8.

Reported feelings of "not enough milk" (Figure 35) in the group of women who continued to breast feed remained at a relatively low level. By contrast, women who stopped breast feeding in weeks 5-8 reported an increase in these feelings in weeks three and four, so that 40% of women reported feelings of insufficient milk in the weeks immediately prior to discontinuation.

Women in group 4 reported a low level of feelings of insufficient milk, with the single exception of week 2, when 36% of women in this group experienced these feelings.

Summary and Discussion - Section 3

Women who stopped breast feeding after 8 weeks reported a lower initial incidence of both "infant" and "physical" problems than either of the other two groups. These women may have continued to feed for 8 weeks because they encountered very few problems, and they then stopped when problems developed.

These findings suggest that within this population of breast feeding women, groups of mothers responded to problems in different ways. One group encountered mainly physical problems and stopped breast feeding within the first four weeks. A second group overcame a high incidence of problems for a short time, and stopped between five and eight weeks postpartum. Another group had few initial problems, but discontinued breast feeding rapidly when they encountered problems at the time of increased incidence of problems

around week 8. Finally, the group of mothers who continued to feed beyond 12 weeks encountered a substantial number of difficulties, but were apparently able to cope with and overcome these problems.

8.2.4

The relationship of social class with the number and type of problems encountered.

(i) Analysis by partner's social class

Table 22 shows the number of women in each social class group who were breast or bottle feeding at 12 weeks. Social class groups are shown according to partner's occupation and classifications are as described in 7.4.; I and II (group A) and III, IV and V (group B).

Significantly more women in group A continued to breast feed than women in group B ($p < 0.001$). Figure 36 shows the rate of discontinuation of breast feeding in both groups.

Figure 37 illustrates the rate of women discontinuing breast feeding per week. The peak rate of discontinuation of breast feeding for women in group A occurred in week 2; no women in this group stopped after week 7. Women in group B, in contrast, showed an increase in discontinuation rate in weeks 7 and 8.

Examination of the relationship of social class with the reason given by the mother for stopping is difficult due to small numbers (n=10, group A; n=34, group B). Comparison by partners' social class showed that 80% of group A who stopped breast feeding complained either of "insufficient milk" or a breast problem, while women in group B gave more diverse reasons such as the mother being tired, or the baby being sick. However, levels did not reach significance.

TABLE 22 METHOD OF FEEDING AT 12 WEEKS CROSS-TABULATED WITH SOCIAL CLASS OF PARTNER AND OF MOTHER

METHOD OF FEEDING	SOCIAL CLASS OF PARTNER				SOCIAL CLASS OF MOTHER			
	I & II (n = 47)		III, IV & V (n = 49)		I & II (n = 39)		III, IV & V (n = 59)	
	No.	%	No.	%	No.	%	No.	%
FULLY BREAST FEEDING	28	60	7	14	20	51	15	25
PARTIALLY BREAST FEEDING	9	19	8	16	7	18	11	19
BOTTLE FEEDING	10	21	34	69	12	31	33	56
SIGNIFICANCE	$p < 0.001$				$p < 0.05$			

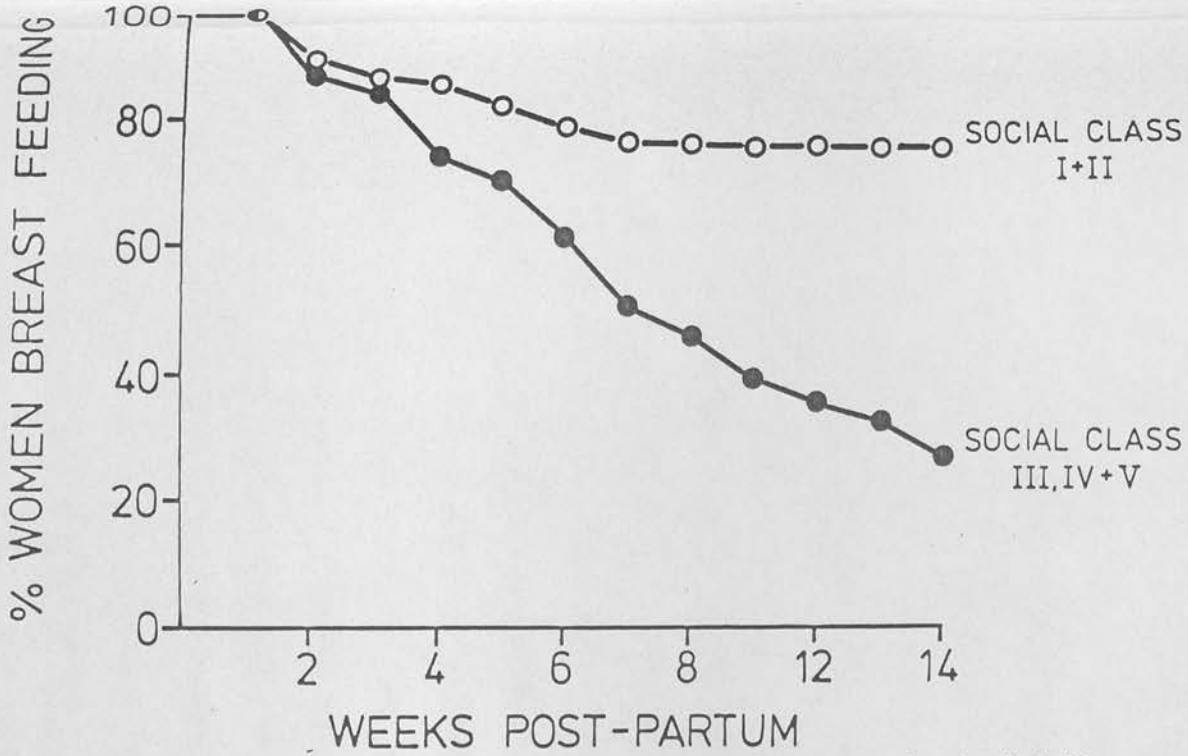

Fig. 36 Study E: Duration of breast feeding for women in Social Classes I and II (n = 44) and women in Social Classes III, IV and V (n = 53)

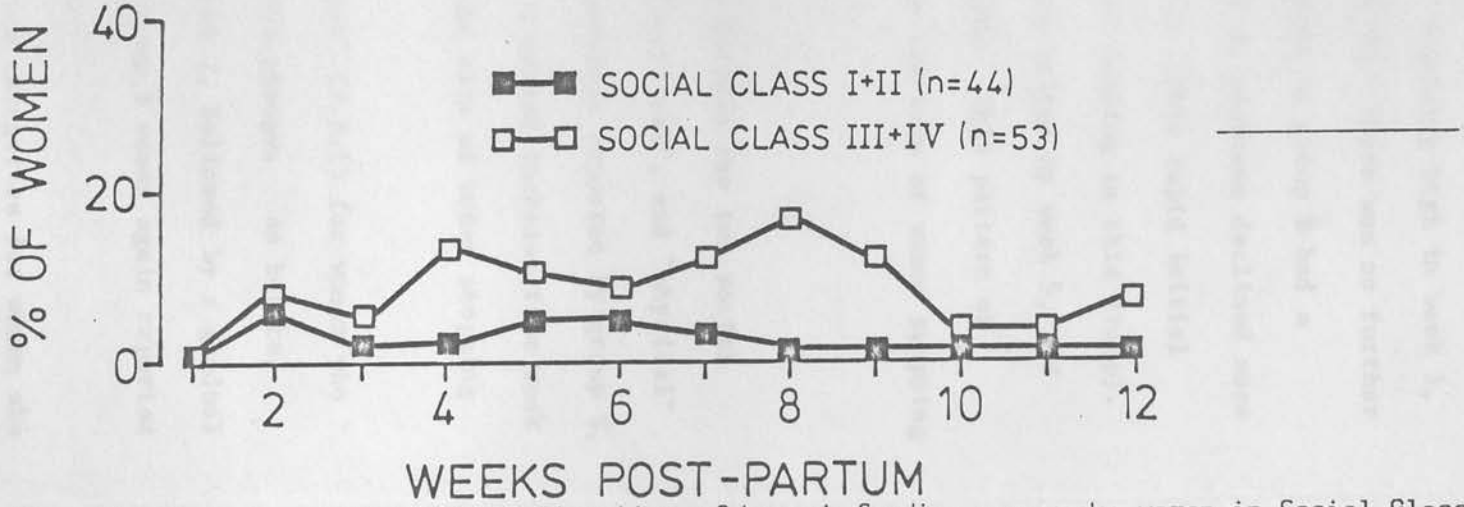

Fig. 37 Study E: Rate of discontinuation of breast feeding per week; women in Social Classes I and II, and women in Social Classes III, IV and V.

Figure 38 illustrates the problem scores of women in different social class groups. Women in social classes I and II (group A) described a peak of all problems in week 2, remaining high in week 3, and followed by a gradual decline until week 12. There was no further rise in problems throughout this period. Women in group B had a different pattern. Following a peak in week 2, problems declined more rapidly initially than for mothers in group A. (This rapid initial decline may be due to mothers stopping breast feeding in this group). However, the decline in reported problems was halted by week 5, and weeks 6-8 showed an increase in total problems. This pattern of reported problems appears to be reflected in the rate of women stopping breast feeding in this group (Fig. 37).

Problem categories

There appeared to be little difference between the two social class groups in terms of "environmental", "emotional", and "physical" problems (Fig. 39). In contrast, "infant" problems reported by group B, although having an initial decline, showed a marked increase from week 5 to week 8, which again was reflected in the rate of women stopping breast feeding in this group (Fig. 37).

Figure 40 shows the total "problem score" (7.3.1) for women who continued to breast feed in both social class groups. As before, there was a peak of reported problems in week 2, followed by a gradual decline which was more rapid in group B. Group B women again reported a rise in problems from weeks 6-8.

Figure 41 illustrates individual problem categories for women who continued to breast feed in both social class groups.

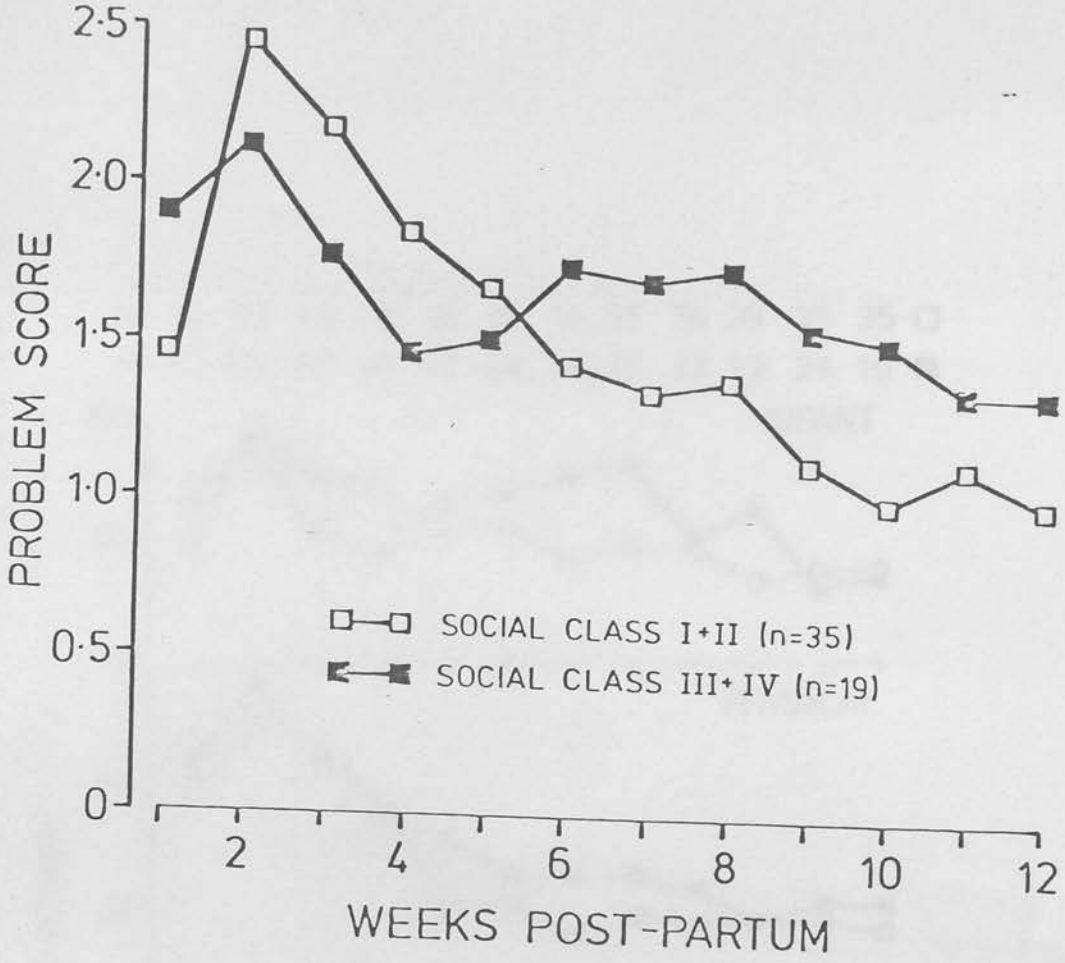

Fig. 38 Study E: Total problem score for women in Social Classes I and II and Social Classes III, IV and V.

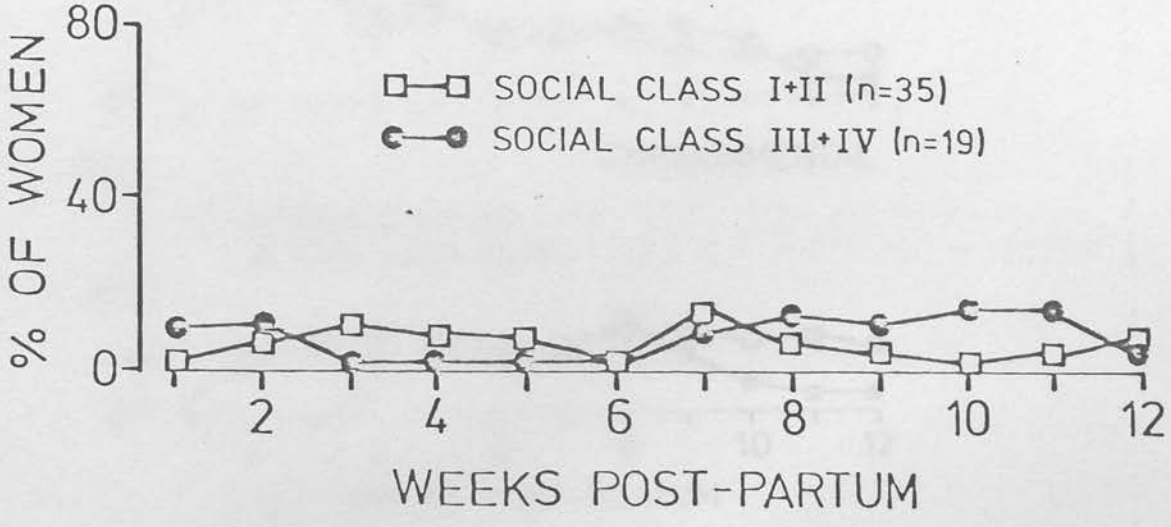

Fig. 42 Study E: Incidence of feelings of "insufficient milk" for women who continued to breast feed in Social Classes I and II, and Social Classes III, IV and V.

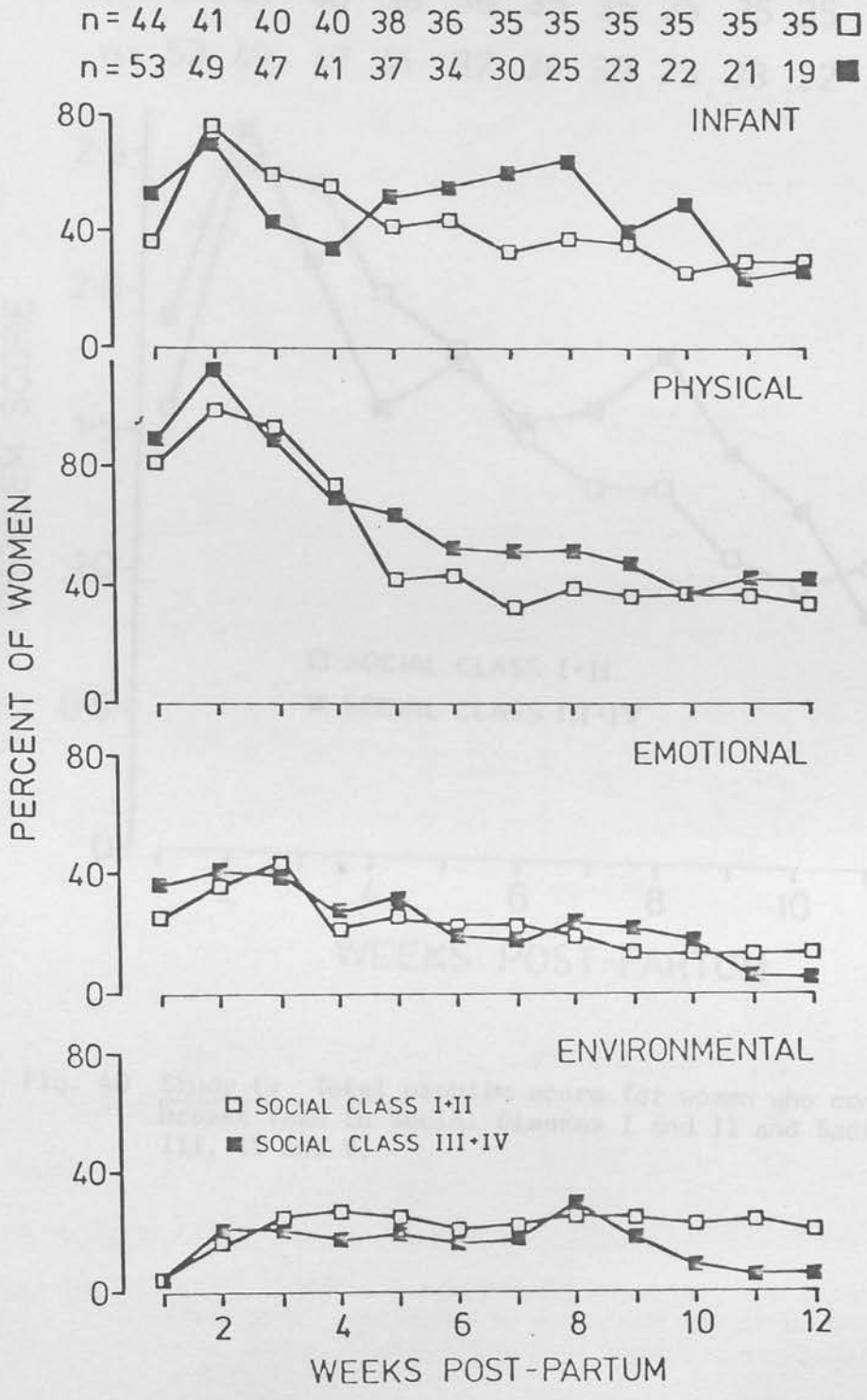

Fig. 39 Study E: Incidence of infant, physical, emotional and environmental problems for women in Social Classes I and II, and Social Classes III, IV and V.

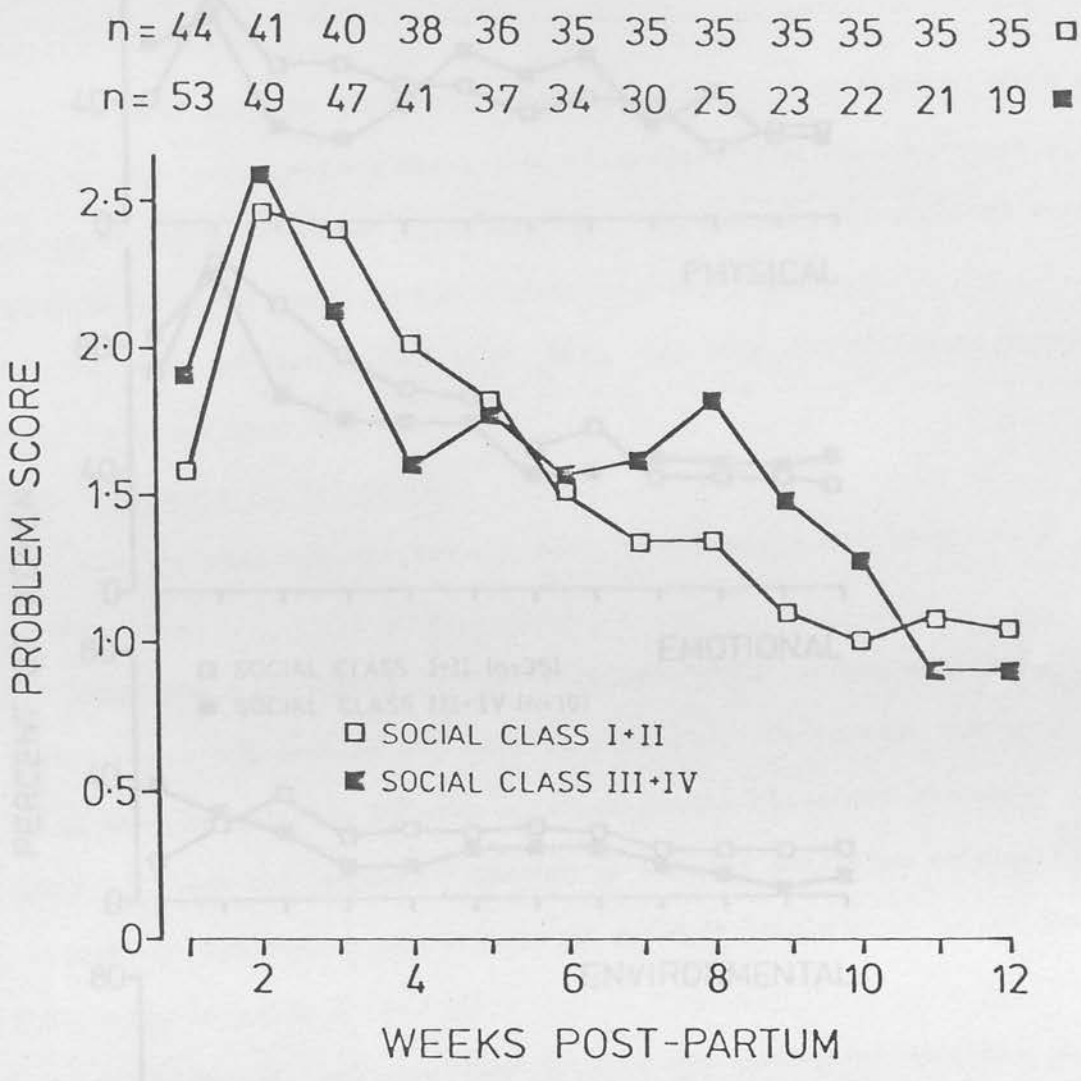

Fig. 40 Study E: Total problem score for women who continued to breast feed in Social Classes I and II and Social Classes III, IV and V.

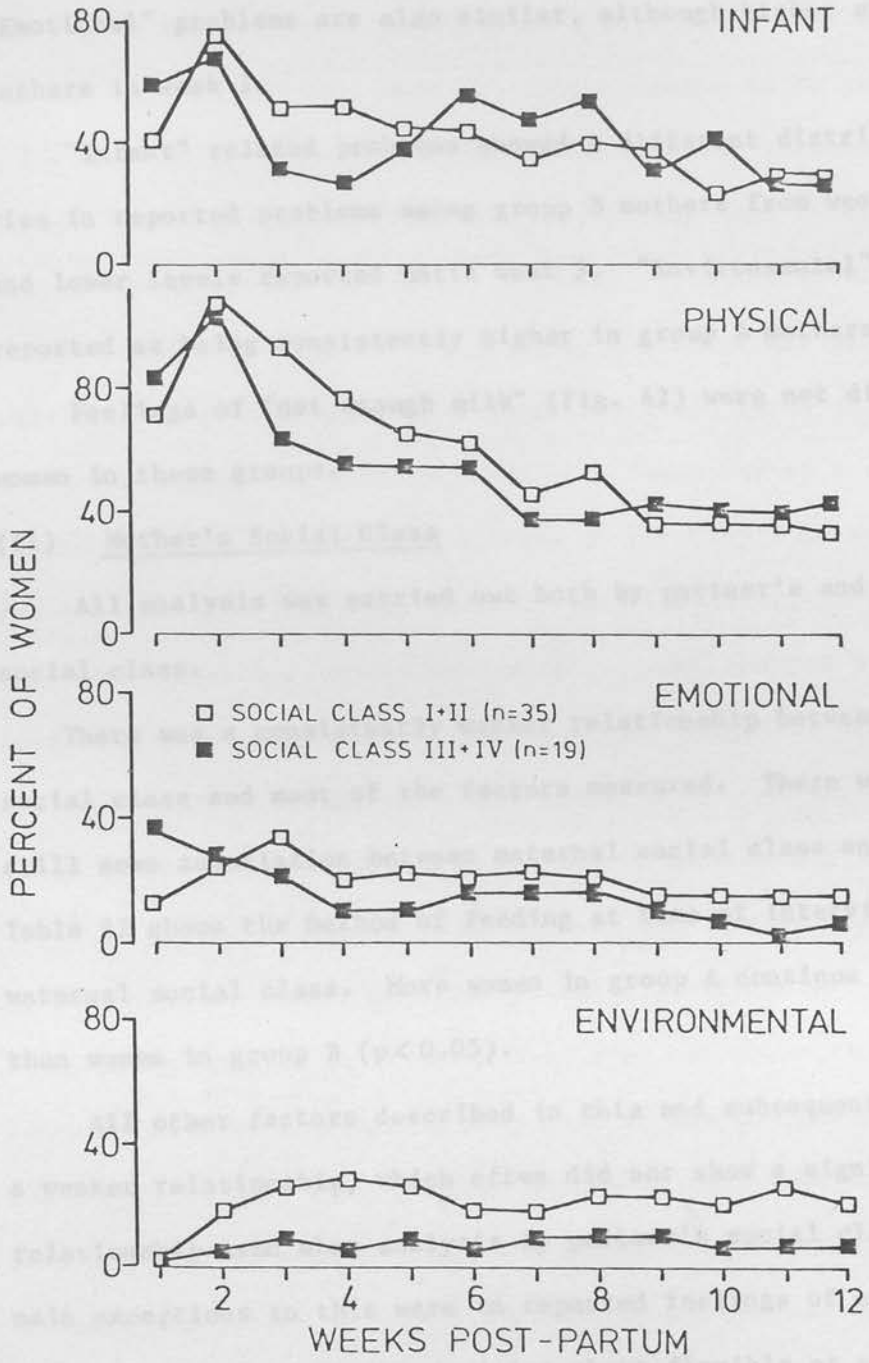

Fig. 41 Study E: Incidence of infant, physical, emotional and environmental problems for women who continued to breast feed in Social Classes I and II, and Social Classes III, IV and V.

"Physical" problems showed a similar overall pattern of occurrence, with levels slightly lower among group B mothers. "Emotional" problems are also similar, although higher among group B mothers in week 1.

"Infant" related problems showed a different distribution, with a rise in reported problems among group B mothers from week 6 - week 8, and lower levels reported until week 5. "Environmental" problems were reported as being consistently higher in group A mothers.

Feelings of "not enough milk" (Fig. 42) were not different between women in these groups.

(ii) Mother's Social Class

All analysis was carried out both by partner's and by mother's social class.

There was a consistently weaker relationship between maternal social class and most of the factors measured. There was, however, still some association between maternal social class and success. Table 22 shows the method of feeding at time of interview related to maternal social class. More women in group A continue to breast feed than women in group B ($p < 0.05$).

All other factors described in this and subsequent sections showed a weaker relationship, which often did not show a significant relationship even when analysis by partner's social class did. The two main exceptions to this were in reported feelings of enjoyment of breast feeding and in the decision about flexible or schedule feeding (discussed in 8.2.5).

As previously reported, (1.2.2.3) social class, as defined by partner's occupational grouping, does relate to duration of breast feeding, women in lower social class groups being less successful than women in higher groups. However, there appears to be relatively little difference in the reported incidence of problems between the two groups. Both groups of women recalled having high levels of problems throughout the first 12 weeks. The rise in incidence of "infant" related problems in weeks 6-8 in group B mothers may reflect either the baby being more disturbed or a lower tolerance level to the baby's disturbed behaviour. Mothering has been described as a two-way process in which the mother's interpretation of the baby's behaviour is as important as what the baby actually does (Schaffer, 1977). The lower tolerance level may result from smaller, more cramped surroundings, less realistic expectations of normal baby behaviour, the discouragement of relatives and friends, or a combination of these and other factors. This will be discussed in more detail in Chapter 9.

The weaker relationship of success with mother's social class may reflect the inaccuracy of occupational classification as a tool for classifying women. It is recognised that the occupational grouping of women is even less sensitive than that of men (Delphy 1981, New Society 1981) due to their more frequent breaks in work, and their preponderance in semi-skilled, non-manual occupations. However, this consistently weaker relationship also raised several interesting questions regarding factors influenced by mother's or by father's social class.

A woman's social class is likely to reflect her own educational and social background, while the social class of her partner, in this

society, will affect other factors such as her present financial, social and geographical environment.

Given the consistently stronger relationship of partner's social class with breast feeding success, this leads to the speculation that present surroundings, such as the size of her house, where it is situated, who her neighbours are, and her financial position, may be more important in affecting outcome of breast feeding than even the mother's own education and family background. It also lends support to the evidence for the importance of husband's support for successful breast feeding (Howie et al, 1982). The mothers' feelings of enjoyment are an important exception to this pattern, and these feelings are likely to be strongly affected by many subtle factors in her own educational and family background.

This speculation raises the further suggestion that it may be possible, by changing present circumstances, to overcome the influences which past education and social background may have on the mother.

8.2.5

Other variables associated with duration of breast feeding

(i) Timing of decision to breast feed (Table 23)

Seventy-three percent of mothers who decided to breast feed during pregnancy, and 62% of those who decided to breast feed after delivery were bottle feeding by 12 weeks postpartum. However, there was no further relationship with timing of decision when considering differences between "always" having wanted to breast feed, and deciding before pregnancy. Therefore, levels did not reach significance.

The timing of the decison to breast feed was related to social class ($p < 0.05$), with 66% of mothers in group A "always" having wanted to breast feed, and 52% of mothers in group B having decided after they

TABLE 23 TIMING OF DECISION TO BREAST FEED (n = 98)

TIME OF DECISION TO BREAST FEED	n	%
ALWAYS WANTED TO	47	48
BEFORE PREGNANCY	11	11
AS SOON AS PREGNANT	13	13
DURING PREGNANCY	15	15
AFTER DELIVERY	8	8
"DON'T KNOW"	4	4
TOTAL	98	100

became pregnant.

(ii) Reason for choosing to breast feed

The main reasons given by the mother for choosing to breast feed are shown in Table 24 (Question 30, Section C). The main reasons given were that it is "best for the baby" or that it is "natural" (68%).

Most (80%) of the mothers who were persuaded to breast feed whether by health service staff or by family or friend were in group B. Seventy-three percent of the mothers who were persuaded to breast feed by health service staff had changed to bottle feeding at the time of the interview.

(iii) Feelings of enjoyment of breast feeding

The feelings of enjoyment reported by mothers about breast feeding (Question 31, Section C) are shown in Table 25. Feelings of enjoyment were not significantly related to duration of feeding. Fifty-two percent enjoyed it primarily because they found it close and satisfying, while 18% did not enjoy it at all. Reasons for enjoyment were not strongly associated with partner's social class; however, 70% of the mothers who reported not enjoying breast feeding were in group B by mothers' occupation. Only 1 mother reported that her own physical pleasure was the main reason for enjoyment although a small number of mothers gave this as a secondary reason. Most women appeared to be reluctant to talk about any sexual feelings connected with breast feeding.

(iv) Frequency of night waking

The frequency of night waking at time of interview for all babies is shown in Table 26 (Questions 8 (a) and (b), Section C). The relationship of frequency of waking with social class is also shown. More babies of mothers in group A (41%) woke more than 4 times per week

TABLE 24 MEAN REASON GIVEN BY MOTHER FOR CHOSING TO BREAST FEED (n = 95)

MAIN REASON FOR CHOSING TO BREAST FEED	n	%
"BEST FOR BABY"	50	52
NATURAL	15	16
CLOSENESS/ENJOYMENT	8	8
PERSUADED BY HEALTH SERVICE STAFF	5	5
PERSUADED BY FAMILY/FRIENDS	4	4
DISLIKE OF BOTTLE FEEDING	2	2
OTHER	11	11
TOTAL	95	100

TABLE 25 REASONS GIVEN BY MOTHER FOR ENJOYMENT OF BREAST FEEDING (n = 94)

REASONS FOR ENJOYMENT	n	%
CLOSE/SATISFYING	49	52
NATURAL	2	2
ONLY MOTHER CAN FEED	11	12
PHYSICAL PLEASURE	1	1
NOT ENJOYED	17	18
OTHER	14	15
TOTAL	94	100

TABLE 26 FREQUENCY OF NIGHT WAKING AT TIME OF INTERVIEW CROSS-TABULATED WITH SOCIAL CLASS OF PARTNER

FREQUENCY OF NIGHT WAKING	ALL MOTHERS (n = 84)		SOCIAL CLASS I & II (n = 41)		SOCIAL CLASS III, IV & V (n = 41)	
	n	%	n	%	n	%
NEVER	57	68	23	56	32	78
1-4 PER WEEK	2	2	1	2	1	2
4 + PER WEEK	25	30	17	41	8	19
SIGNIFICANCE			$p < 0.1$			

than those in group B (19%). This may be related to the greater numbers in group A who were still breast feeding at time of interview; however, 78% of women in group B reported that their babies had never woken at night since return from hospital, compared to 56% of women in group A.

(v) Decision on timing of feeds

Mothers were asked how they decided about the timing of breast feeds (Question 6, Section C) and the answers were coded according to whether the mother usually responded to the baby's behaviour (baby decides - flexible), or whether she usually fed according to a time schedule (mother decides - schedule). Some mothers used a combination of these two methods of timing.

Table 27 shows the numbers of mothers who fed according to the three different regimes. Also shown are the differences in social class groups, both by partner's and by mother's occupation; more women in group A fed according to a flexible regime than women in group B ($p < 0.05$ by mother's occupation, $p < 0.1$ by partner).

Figure 43 shows the feeding regime compared to method of feeding at 12 weeks; more mothers who fed predominantly on a schedule regime were bottle feeding at 12 weeks.

(vi) "Good" or "difficult" baby

Mothers were asked if they would describe their baby as usually "good" or usually "difficult" (Question 9, Section C). Table 28 shows the mothers' responses: 81% reported the baby as being "good". There were no differences in responses across social classes, or in duration of breast feeding.

(vii) Planned or unplanned pregnancy

Whether or not the baby was planned (Question 39, Section C) was not related to success in breast feeding (Table 29, $p < 0.5$).

TABLE 27 FEEDING REGIME (FLEXIBLE OF SCHEDULE) CROSS TABULATED WITH SOCIAL CLASS OF MOTHER AND OF PARTNER

FEEDING REGIME	ALL MOTHERS		SOCIAL CLASS OF PARTNER				SOCIAL CLASS OF MOTHER			
			I & II		III, IV & V		I & II		III, IV & V	
	(n = 84)		(n = 41)		(n = 41)		(n = 35)		(n = 49)	
	n	%	n	%	n	%	n	%	n	%
FLEXIBLE	53	63	29	71	22	54	23	66	30	61
SCHEDULE	14	17	4	10	10	24	2	6	12	24
COMBINATION	17	20	8	20	9	22	10	29	7	14
SIGNIFICANCE			$p < 0.05$				$p < 0.1$			

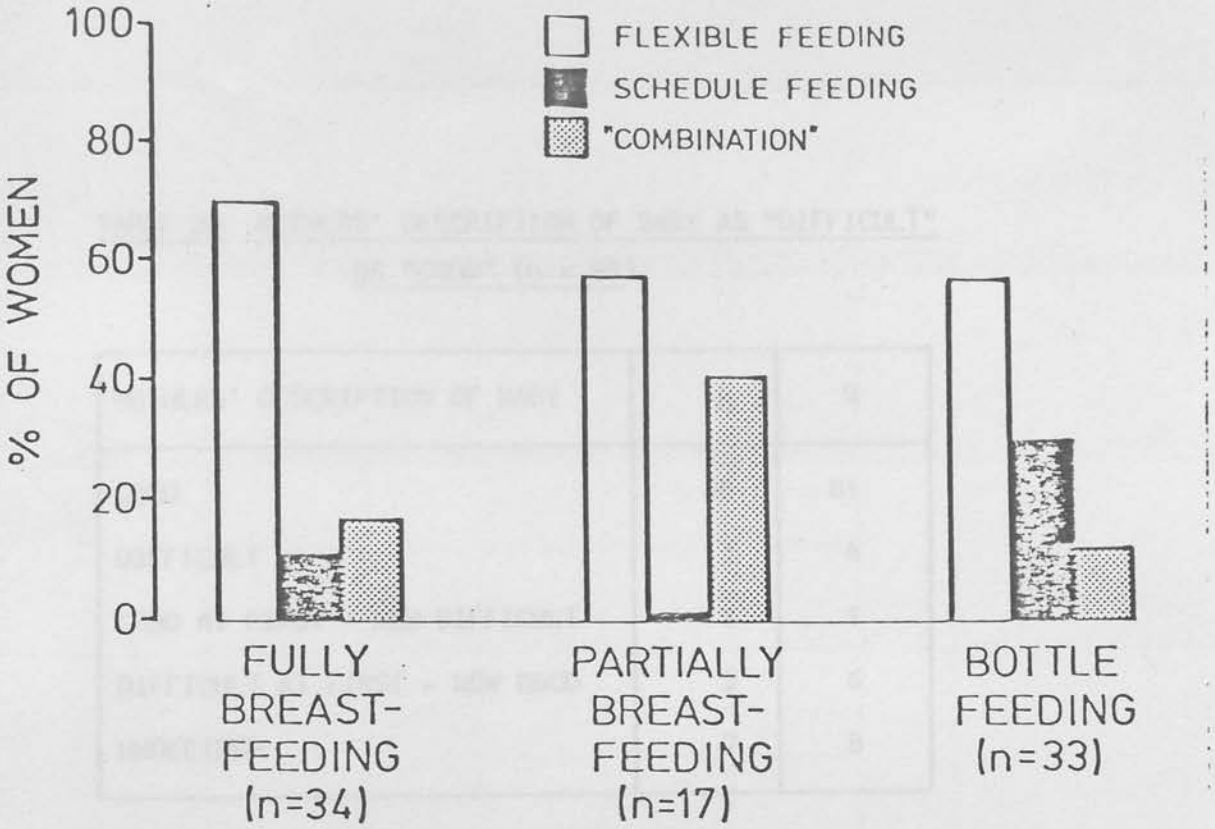

Fig. 43 Study E: Method of feeding at 12 weeks by "flexible", "schedule", or "combination" regime (see Chapter 8).

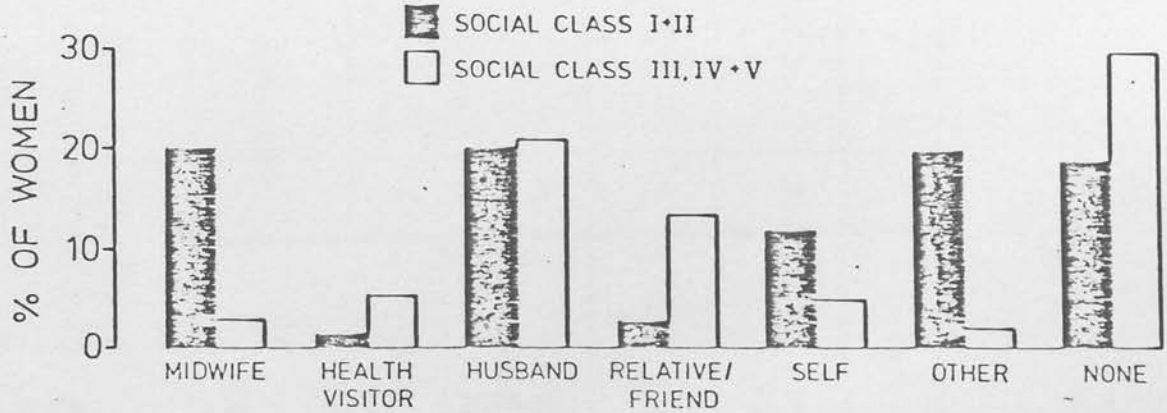

Fig. 44 Study E: Main source of support for breast feeding for women in Social Classes I and II, and Social Classes III, IV and V.

TABLE 28 MOTHERS' DESCRIPTION OF BABY AS "DIFFICULT" OR "GOOD" (n = 84)

MOTHERS' DESCRIPTION OF BABY	n	%
GOOD	68	81
DIFFICULT	3	4
GOOD AT FIRST - NOW DIFFICULT	1	1
DIFFICULT AT FIRST - NOW GOOD	5	6
UNDECIDED	7	8

TABLE 29 METHOD OF FEEDING AT 12 WEEKS CROSS-TABULATED WITH WHETHER OR NOT PREGNANCY WAS PLANNED. PERCENTAGES SHOWN BOTH BY ROW AND BY COLUMN (n = 95)

METHOD OF FEEDING	UNPLANNED			PLANNED			PLANNED BY MOTHER NOT FATHER			OTHER		
	n	Row %	Col. %	n	Row %	Col. %	n.	Row %	Col. %	n.	Row %	Col. %
FULLY BREAST FEEDING	4	12	20	29	85	40	0	-	-	1	3	100
PARTIALLY BREAST FEEDING	4	23	20	13	76	18	0	-	-	0	-	-
BOTTLE FEEDING	12	27	60	30	68	42	2	4	100	0	-	-
SIGNIFICANCE	N.S.											

A study of larger numbers might have produced a significant difference if the observed trend towards mothers who planned their pregnancy being more successful in breast feeding, had been reproduced.

(viii) Parity

Parity of the mother appears to have little relation to duration of breast feeding (Table 30, $p<0.5$) although it is of interest to note that more parous women are partially breast feeding at 12 weeks postpartum than primigravid women.

(ix) Previous breast feeding experience

Previous breast feeding experience was more strongly related to success than parity (Table 30); women who had previously breast fed for longer than four weeks were significantly more likely to be breast feeding at 12 weeks than those who had previously stopped before four weeks ($p<0.05$).

(x) Age of Mother

Age of mother appears to be related to duration of breast feeding, women under 20 tending to stop within 5 weeks, while women over 30 are more likely to continue ($p<0.05$) However, age is strongly related to social class (Table 31); younger mothers belonging predominantly to group B, while older mothers belong to group A ($p<0.0001$)

(xi) Sex of Baby

There was no relationship of sex of the baby with duration of breast feeding.

Summary and Discussion - 8.2

These data provide some insight into some of the other factors which affect success in breast feeding.

TABLE 30 METHOD OF FEEDING AT 12 WEEKS CROSS-TABULATED WITH PARITY AND PREVIOUS BREAST FEEDING EXPERIENCE

PERCENTAGES SHOWN BOTH BY ROW AND BY COLUMN

(n = 98)

METHOD OF FEEDING	PARITY									PREVIOUS BREAST FEEDING EXPERIENCE												
	0			1			2+			≥ 4 WKS			< 4 WKS			PREVIOUS BOTTLE FED			NOT FED PREVIOUSLY		
	n	Row %	Col. %	n	Row %	Col. %	n	Row %	Col. %	n	Row %	Col. %	n	Row %	Col. %	n	Row %	Col. %	n	Row %	Col. %
FULLY BREAST FEEDING	17	49	39	15	43	34	3	9	30	17	49	46	0	-	-	1	3	33	17	49	37
PARTIALLY BREAST FEEDING	5	28	12	12	67	27	1	6	10	9	50	24	4	22	33	0	-	-	5	28	11
BOTTLE FEEDING	21	47	49	17	38	39	7	15	60	11	24	30	8	18	67	2	4	67	24	53	53
SIGNIFICANCE	$p < 0.5$									$p < 0.05$												

TABLE 31 SOCIAL CLASS OF PARTNER CROSS-TABULATED WITH AGE OF MOTHER (n = 101)

	AGE OF MOTHER (YEARS)				
SOCIAL CLASS OF PARTNER	20	21-24	25-29	30-34	35+
SOCIAL CLASS I AND II (GROUP A)	1	5	14	21	6
SOCIAL CLASS III,IV & V (GROUP B)	7	21	17	8	1
SIGNIFICANCE	$p < 0.0001$				

Mothers who chose to breast feed late in pregnancy or following delivery, or who were persuaded to breast feed, appeared to be more at risk of failure. Mothers who were previously unsuccessful, and those who attempted to breast feed on a rigid schedule were similarly at risk. The young mother was particularly vulnerable, but this may be as a result of her social environment rather than simply her age.

Although mothers predominantly enjoyed breast feeding, a sizeable number actively disliked it. There was a reluctance to discuss sexual feelings connected with breast feeding; this is in agreement with Oakley (1981) who found that women in this society were uncomfortable with the concept of breast feeding being sexually arousing. Contrary to studies in some other cultures (Harfouche, 1965) there was no correlation between the sex of the baby and success in breast feeding; this may reflect the unwillingness of these women to acknowledge sexual feelings while feeding. The main reason for enjoyment, however, was most frequently given as the feelings of closeness and satisfaction engendered by the baby, again in agreement with Oakley (1981b).

From these data, some of the factors associated both with social class and with success in breast feeding emerge. This provides some insight into the factors which are at work within the social class environment. It also leads to awareness of certain "at risk" characteristics which could be of value to health professionals who wish to direct their care to where it is most needed, and which may be used in a way similar to that described by Copeland, (1981) and Frommer & O'Shea, (1973), in identification of women at risk. It is important to consider, however, that although both "at risk" and helpful factors may be present, the picture can always be complicated by other factors. This is discussed further in Chapter 9.

8.2.6 Professional help and support

The amount of professional support provided is summarised in Table 32 (Questions 3,10,12,17(a), Section C). There was no significant difference in the number of home visits by the health visitor ($p<0.2$) or in the number of clinic visits ($p<0.2$) according to partner's social class. Table 33 shows that 70% of women never received a visit by appointment from their health visitor; forty-four percent of mothers reported at least one "wasted call" by the health visitor (Question 14, Section C); that is, the health visitor calling while the mother was out. During the time that the community midwife was visiting, the mean number of midwives seen by any one mother was two; the maximum number of different midwives seen was seven.

Table 34 shows the mothers' reports of how helpful they felt professional services to be, with regard to breast feeding. Forty-four percent of mothers found the health visitor helpful, but 30% either had reservations, or found her to be not helpful. A significant minority (24%) did not require help from the health visitor.

Thirty two mothers (38%) reported that the child health clinic was helpful. However, an equal number of women reported that they attended the clinic only to weigh the baby, and 13% reported that was not helpful.

Of the 70% of women who required help from their G.P., 51% reported that the service provided was helpful.

Table 35 illustrates the mothers' reports of the person who provided most help throughout breast feeding (Question 21, Section C). Professional support from midwives and health visitors was only mentioned by 19%. Husbands were a major source of support. A large proportion of women (25%) reported that no-one was a particular support.

TABLE 32 MOTHERS' REPORTS OF AMOUNT OF PROFESSIONAL SUPPORT IN THE FIRST 16 WEEKS (n = 84)

	NUMBER OF CLINIC VISITS	NUMBER OF HOME VISITS BY HEALTH VISITOR	NUMBER OF HOME VISITS BY G.P.	NUMBER OF HOME VISITS BY MIDWIFE
MEAN	4.4	3.4	0.94	4.1
± SD	± 2.5	± 2.2	± 1.39	± 2.2
RANGE	0-8	0-8	0-8	1-8

TABLE 33 MOTHERS' REPORTS OF HEALTH VISITOR VISITS; BY APPOINTMENT OR NOT (n = 84)

VISITS BY APPOINTMENT	n	%
ALWAYS	7	8
FIRST VISIT	4	5
OCCASIONALLY	14	17
NEVER	59	70

44% OF MOTHERS REPORTED AT LEAST ONE "WASTED CALL" BY HEALTH VISITOR

TABLE 34 MOTHERS' REPORT OF HELPFULNESS OF PROFESSIONAL SERVICES (n = 84)

	HEALTH VISITOR		BABY CLINIC		GENERAL PRACTITIONER	
	n	%	n	%	n	%
HELPFUL	36	44	32	38	43	51
HELPFUL, WITH RESERVATIONS	10	12	-	-	8	10
NOT HELPFUL	15	18	11	13	8	10
UNHELPFUL	1	1	-	-	-	-
NO HELP NEEDED/ NOT ATTENDED	20	24	9	11	25	30
ATTENDED CLINIC TO WEIGH BABY ONLY	-	-	32	38	-	-
DON'T KNOW	2	2	-	-	-	-

TABLE 35 MOTHERS' REPORT OF PERSON WHO PROVIDED MOST HELP THROUGHOUT BREAST FEEDING (n = 84)

SOURCE OF HELP	n	%
HOSPITAL MIDWIFE	9	11
COMMUNITY MIDWIFE	1	1
HEALTH VISITOR	6	7
HUSBAND	18	21
RELATIVE/FRIEND	10	12
SELF	10	12
BABY	1	1
OTHER	8	9
NONE	21	25
TOTAL	84	100

TABLE 36 MOTHERS' REPORT OF SOURCE OF ENCOURAGEMENT OR DISCOURAGEMENT OF BREAST FEEDING (n = 84)

SOURCE OF ENCOURAGEMENT OR DISCOURAGEMENT	ENCOURAGEMENT		DISCOURAGEMENT	
	n	%	n	%
HOSPITAL MIDWIFE	3	3	1	1
HEALTH VISITOR	3	3	0	-
GENERAL PRACTIONER	1	1	0	-
HUSBAND	12	14	3	3
RELATIVE/FRIEND	17	20	33	39
SELF	3	3	0	-
BABY	1	1	0	-
OTHER	6	7	1	1
NONE	39	46	47	55
TOTAL	84	100	84	100

Examination of social class difference by partner's social class shows no difference in support. However, examination of social class by mother's social class, although it does not reach levels of significance ($p < 0.1$, Fig.44), does show some interesting trends. More women (30%) in group B have no support than women in Group A (18%). The midwife is more important to mothers in group A, and family and friends to Group B. Husbands are the most important source of support, and are of equal importance in both groups.

Mothers were asked about encouraging or discouraging influences on breast feeding (Question 22, Section C). Table 36 shows the main sources of encouragement and discouragement. The main influence, both for encouragement and discouragement, appears to be the family; 20% said family or friends were encouraging, while 39% said they were discouraging. Forty-six percent of women received no encouragement, but 55% received no discouragement.

Summary and Discussion - 8.2.6

Despite the marked and well documented differences in breast feeding success between social class groups, women in different social classes receive a similar amount of professional help in terms of numbers of home and clinic visits by health professionals. Mothers do not often report, however, that midwives, health visitors and GP's are a particular help. Mothers often see a variety of different community midwives during the time that they are visiting.

Clinic services continued to be used in large part only to weigh the baby in the manner criticised by Sheldon (1967, Chapter 2). It is recognised that this wish to weigh the baby may arise from the mother's need for reassurance about the adequacy of her milk supply; however, it must be questioned whether mothers should be encouraged to

regard the baby's weight in this way, or whether other criteria of well being would be more appropriate.

There appears to be little advance planning of home visits by health visitors; these data support Orr's findings (1978) that 70% of health visitors never gave advance notice of their visit. These findings, together with the large number of "wasted calls" by the health visitors at a time of severe understaffing (Black, 1980) the fact that visiting by appointment is preferred by mothers (Orr, 1978) and the possibility that visiting by appointment is more effective, (Chapter 6) raises questions about the organisation of professional services for the postpartum mother.

Husbands are reported to be of most support to women in both social class groupings. This is in agreement with Copeland (1981), who found that 79% of her sample of postpartum women reported that the support of their husband was important.

A more detailed examination of the quality of care offered to the postpartum woman is discussed in Chapter 9.

8.3 DISCUSSION

From the results presented in this chapter, a picture begins to emerge of the variety of problems faced by breast feeding mothers, their different patterns of responses to these problems and the help they receive from the health services. It is clear that mothers encounter many problems, and that these may lead them to give up prematurely, against their own expressed wishes. The high proportion of women who were distressed by stopping breast feeding in this study supports West (1980) who found that 86% of mothers did not wish to stop breast feeding.

The commonest reasons given by mothers for stopping breast feeding were related to the time of discontinuation. Problems related to the breast occurred early, and "insufficient milk" and a crying baby were more important after 5 weeks. These data support Gunther (1945) and Martin (1978) and show that physical problems were the immediate difficulty in the first four weeks.

"Insufficient milk" was still reported as a problem in this study population. Mothers' anxiety about milk production was reflected in the use of early supplements in the form of bottles of formula milk and solids. It is likely that the early introduction of supplements does in fact reduce the mother's breast milk due to a reduction in nipple stimulation and breast emptying and this, together with anxiety on the part of the mother which affects her let down reflex may indeed result in insufficient milk. Mothers' anxiety may be aggravated by the baby being unsettled, or by her own tiredness, or by any other problem which she has to face at this time.

Problems related to breast feeding appeared to be especially troublesome around week 2. This coincides with the change of supervision from community midwife to health visitor (2.2). It must be questioned whether it is desirable that a change in supervision should occur at a time of peak vulnerability. Raphael (1982) stresses the importance of a single individual who provides continuous support throughot the postnatal period. Mothers involved in Study 4 (Chapter 6) stated that consistent care given by one person was of central importance to their successful breast feeding. The mother in Western society experiences a lack of support rarely experienced in other cultures (Raphael, 1982). The prevalence of small, mobile families does not encourage strong familial or friendship bonds. Mothers in this study found that tiredness was a major problem and this may often result from the fact that there is little practical support offered with housework or childcare. Twenty-five percent of women in this study reported that no-one was a particular help with breast feeding and only 12% received most help from their family or friends. This dearth of positive encouragement of breast feeding results in a lack of reassurance about the adequacy of the milk supply, and a young mother dealing with a crying, restless baby may indeed need the reassurance that only the bottle can give her, that she is feeding her child adequately.

However, the data presented in this study show that changing to the bottle may be an inappropriate response to the problem; 56% of women reported that the baby's behaviour remained either unchanged, or became less settled. It is surely preferable to seek a solution which both restores the mother's confidence in herself, and preserves the advantages of breast feeding.

The earlier studies presented in this thesis (Chapters 4,5 & 6) have confirmed the importance of the critical variable of social class. It is therefore of considerable interest to note that mothers in upper social class groups had similar numbers of problems to face.

This similarity in the occurrence of problems suggests that it is not the problems per se, but the mother's ability to overcome them that is the rate limiting factor. Problems, however, were not equally distributed across time. As discussed in 8.2.4, the timing of discontinuation of breast feeding may be related to the timing of problems, especially among mothers in lower social class groups. Mothers in higher social class groups tended to continue breast feeding in spite of problems. However, it is difficult to quantify adequately the subtle interrelationships of problems and feelings faced by mothers at this time. This interrelationship is described and discussed in the next chapter.

The fact that paternal social class was more strongly related to duration of breast feeding than maternal social class suggests that present environmental factors may be of critical importance, as discussed in 8.2.4. Other related variables discussed in 8.2.5 are of interest, but most of the significant variables followed the trend of social class. It may be that these variables are some of the factors which work within social class, making it such a strong discriminator in success.

Mothers in different social class groups received similar amounts of support from the professional services. However, given the discontinuation rate of breast feeding, it must be questioned whether the support is adequate. Not only is the amount of support provided important, but also the quality of support and the way in which the

mother uses the services available. This is examined in the next chapter.

8.4 CONCLUSIONS

1. Breast feeding mothers encountered many problems which lead them to give up breast feeding against their own expressed wishes.

2. Mothers most often gave physical problems, a crying baby, or "insufficient milk" as the main reason for premature discontinuation.

3. Mothers who discontinued breast feeding usually gave extra bottles and solids early.

4. Detailed analyis showed that problems are many and varied, and that a solution based on solving "insufficient milk" would be a major over-simplication.

5. Related problems were especially troublesome about week 2, and the most common were tiredness, and a crying baby. A further peak of problems occurred around weeks 7-8 for mothers in lower social class groups.

6. The maternal response to change to bottle feeding was frequently an inappropriate response to the problem.

7. Social class was strongly related to success in breast feeding, but was relatively unimportant in the enjoyment of breast feeding, or in the number of problems reported. This suggests that it may not be the problems, but the ability to overcome then, that is the important factor.

8. Social class based on paternal occupation was more discriminating than that based on maternal occupation. This suggests that it may be environmental factors, and not simply inherent maternal factors, that are important.

9. Other variables were important and these may provide a picture of the "at risk" factors such as previously unsuccessful breast feeding mothers, and those who decided to breast feed later in pregnancy.

10. Mothers did not often find the help offered to them to be useful. There was no positive discrimination in distribution of care directed towards those most at risk.

CHAPTER 9

STUDY E: THE MOTHERS' REPORT OF PROBLEMS ENCOUNTERED WHILE BREAST FEEDING, AND THE PROVISION OF CARE BY HEALTH SERVICE STAFF: A DISCUSSION OF CASE STUDIES

9.1 INTRODUCTION

Some of the problems in the first 12 postpartum weeks described by women in the course of interview are examined in Chapter 8. Throughout the interviews, however, women recalled these problems occurring in combination, or being affected by other factors in their hospital or home environment. This is in agreement with reports by Oakley (1980) and Graham & McKee (1980) who studied factors affecting women in early motherhood as described in Chapter 1. This interactive aspect of problems cannot be quantified, but simply described. Similarly, the effectiveness of the care and support available to women cannot be strictly measured, but can be described according to how useful women found it to be. It is considered that a report of individual case studies adds a qualitative dimension to the previously described quantitative data.

This chapter outlines some case studies of breast feeding women resulting from the interviews as described in Chapter 7. The cases presented have been selected as typical of the 97 women interviewed. A wide variety of problems were reported, and as many of these as possible are included in this chapter. It should be noted, however, that even careful selection of cases cannot cover all points comprehensively. Women describe many problems and responses, all of which are affected by their own environment. It is intended in this chapter to illustrate the variety of factors which may affect breast feeding women, and to show that single factors provide inadequate reasons, and may be misleading. It is also intended to illustrate how a woman's social background and environment are related not only to the type of problems she experiences, but also to the type of care and support she receives.

Note: Eight case studies are presented, illustrating problems both in hospital and at home. Code numbers given refer to the code number of the interview schedule so that all cases can be examined. Mothers are given fictitious initials to protect their identity.

9.2 PROBLEMS AND CARE IN HOSPITAL

Problems experienced in hospital are predominantly maternal health and physical breast-related problems (Chapters 1 and 8). These can, however, be aggravated by the resultant stress and anxiety, and are affected by factors such as the health of the baby. The support and care received at this point can be critical in encouraging an active let-down reflex and successful initiation. The following case studies describe some problems, and the care available.

Case Study 1

Code number 4. Mrs. A.B.

Age 25

First baby Girl, birthweight 3.57 kg.

Social class of mother: II Husband: I

Mrs. A.B. reported having problems, dating back from the first feed in hospital, in encouraging the baby to take the breast. She was very keen to succeed in breast feeding, and her husband was enthusiastic and supportive. However, each breast feed was a struggle, as she recalled the baby continually fixing wrongly and ineffectively on the breast and taking an hour to feed, every 3 hours. This became very tiring and on her 7th postpartum day, with no improvement in the feeding, she stopped breast feeding.

Mrs. A.B. commented on her care during this time. She wrote in her postal questionnaire: "I would dearly have liked to be feeding my child myself now but due to my ignorance and too many helpful people at the hospital I was unable to cope. The main problem, I was told, was that although (the baby) had a very strong sucking action, she did not have the technique for the breast. When eventually given the bottle she became a much more contented baby, unfortunately making myself feel

as though I had failed miserably. However, I do feel that given consistent help and advice I could have succeeded in breast feeding".

Comments

Mrs. A.B. was aware that the problem she experienced with fixing the baby on the breast was not insoluble, and that with more consistent care and encouragement she may well have succeeded. Her lack of success in breast feeding was in spite of her own motivation, her education, and the enthusiasm of her husband. Women interviewed seemed to find teaching the technique of breast feeding to the baby, and to themselves, particularly difficult if excessively tired at this stage.

* * *

Case Study 2

Code number 39 Mrs. C.D.

Age 24

Second baby Girl Birthweight 3.12 kg.

Social class of mother: IIIN, husband IIIN

Mrs. C.D. also had problems in hospital; her nipples cracked on her 2nd postpartum day due to the difficulty in fixing the baby at the breast. Although keen to breast feed, she recalled feeling that she could not continue due to the pain and discomfort. The ward staff, she said, were helpful, but only when asked. She had to look for a nurse in the baby nursery every time she wanted help. She acknowledged that she "never sticks at things long enough", but recalled that the staff acquiesced in her decision to stop breast feeding, without offering advice or encouragement to continue.

Comments

Sore and cracked nipples frequently result from the baby having difficulty with "fixing" properly at the breast (Gunther, 1945), and

the development of sore nipples may indicate inadequate supervision and teaching of this technique (Fisher, 1981). Although not overly enthusiastic about breast feeding, Mrs. C.D. did want to continue; she felt that she may well have continued if help had been offered, without having to go and look for it.

* * *

Mothers whose babies are admitted to the Special Care Unit describe particular problems in coping with the experience.

Case Study 3 Mrs. E.F.

Code number 13 Age 38

First baby Boy, birthweight 4.6 kg

Social class of mother: IIIN Husband: II

Mrs. E.F.'s baby was in the Special Care Nursery for the first 15 days, with a fractured skull. Although not seriously ill, Mrs. E.F. still found this time, with the baby being separated from her and under intensive care, very stressful. She became very tired, and this was aggravated by the strain of frequently walking up and down the three flights of stairs which separated her postnatal ward from the Special Care Nursery. The Nursery itself was very hot, had no facilities for privacy, resulting in difficult physical conditions for women trying to breast feed. However, Mrs. E.F. found the intensive care staff constantly encouraging and helpful. She was encouraged to use the breast pump for the first 5 days to stimulate her milk supply, until the baby was well enough to breast feed. This was successful, and on her 6th postpartum day, with encouragement from the intensive care staff, the baby took 90 mls. of breast milk on test weigh. Mrs. E.F. then persevered happily until 17 days, when she was discharged home. Her comment on her postnatal care was that the only time she had

queries was while she was in hospital, and "there was always someone there".

Comment

The comment "there was always someone there" appeared to be the key to Mrs. E.F.'s success. Although she had major problems, both physical and emotional, over the first 15 days postpartum, the constant encouragement and presence of the staff emerged as the central reason for her continuation of breast feeding. Mrs. E.F. was test-weighing the baby to measure the amount of milk taken; a procedure which can be fraught with emotional difficulties (3.1.1). She found, however, that with encouragement, this procedure posed few problems for her.

* * *

9.3 PROBLEMS AND CARE AT HOME

Following discharge from hospital, women describe a variety of factors both supportive and adverse, which might affect their breast feeding.

Case Study 4

Code Number 12 Mrs. G.H.

Age 23

First baby Boy, birth weight 2.49 kg.

Social class of mother: IIIM Husband: IIIM

Mrs. G.H. was discharged home on day 5 postpartum. Her breast feeding in hospital had gone well; the baby had been admitted to the Special Care Unit for the first 24 hours, but breast feeding was quickly established and following discharge all went well for the first 2 - 3 days. Although this was her first baby, Mrs. G.H. was from a large family herself, and had experience in handling small babies. She had practical help and encouragement from her mother and sisters who lived nearby. Her husband, too, was helpful and enthusiastic about breast feeding. She was keen to succeed with breast feeding; she said she had "just never thought about bottle feeding", and that "I felt content within myself because I was doing it".

The baby slept well and was contented throughout the early weeks. Mrs. G.H. took him to the baby clinic every two weeks and seemed to be happy with the help which she received there. She had never seen her health visitor at home, her health visitor had called on two separate occasions, when Mrs. G.H. was out of the house. Her general practitioner called in once on the day after she was discharged from hospital.

When asked the main reason for stopping breast feeding, Mrs. G.H. said that tiredness was the major factor; she kept falling asleep throughout the day, and was anxious that she would fall asleep while feeding the baby. She thought that bottle feeding would be less tiring.

This excessive tiredness seemed out of place with the practical help Mrs. G.H. received from her family, and the fact that the baby was contented. On closer questioning, it emerged that the main problem was that friends of her husband and family visited every evening, and often stayed until 11 p.m. This continued company was aggravated by Mrs. G.H.'s reluctance to breast feed in a large group of people; she was willing to feed with one or two other people present, but not with five or six of her husband's family. She also found it embarrassing to retire to her bedroom to breast feed. She persevered, in spite of increasing tiredness and feelings of depression, until the baby was six weeks old. At this stage, her husband went away on business for two weeks. Although this relieved the pressure of constant visitors, she was by now so tired that she found the constant care of the baby, with no help from her husband, very demanding and she contemplated changing to bottle feeding. She went to the baby clinic at six weeks where she recalled her health visitor offering no practical advice, and advising her to "make up your own mind". She decided, reluctantly, to stop breast feeding at eight weeks, before her husband returned home.

Comment:

Mrs. G.H. had many positive factors in her favour; she had always wanted to breast feed, and had practical help from close family. Her husband was enthusiastic and helpful. However, despite all these factors, Mrs. G.H. found the combination of embarrassment and tiredness

very difficult to overcome. The constant presence of visitors was too tiring for her to cope with. The health visitor was not aware of this problem. Mrs. G.H. had never received a home visit, and had not thought to mention this as a "problem" at the clinic. The absence of her husband was the decisive factor in her already difficult situation.

* * *

Case Study 5

Code Number 18 Mrs. I.J.

Age 26

Second baby Girl, birth weight 3.62 kg.

Social class of mother: II Husband: IIIM

Mrs. I.J. was a 26 year old nurse who was keen to breast feed. She had one child of 4½ years whom she had breast fed for eight weeks, and had had a spontaneous abortion prior to this present successful pregnancy.

Breast feeding in hospital had gone well, although the baby settled into a 3 hourly pattern of waking which Mrs. I.J. found quite tiring, and which she found difficult when she went home on day 5, due to the demands of her other child. However, she was reassured by her community midwife that this pattern of feeding was normal, and advised that she had to rest as much as possible.

Happy with this reassurance, she persevered and the baby started to sleep for longer periods .

In her second postpartum week, Mrs. I.J. noticed that the baby had a white rash on her tongue. Suspecting a monilial infection, she went to the baby clinic where her health visitor diagnosed a "milk rash", and told her there was no cause for alarm. However, by the following

week, Mrs. I.J. found that her nipples were cracked and sore, and that the baby's rash was worse. She went to her general practitioner, who diagnosed oral thrush in the baby, and gave her Nystan to treat the baby's infection. No treatment was given for her own similarly infected nipples.

Around this time, Mrs. I.J. found that her own mother, who lived nearby and was mentally ill, caused extra stress by being very demanding. Her husband provided practical and emotional help, but at this stage he started working on night shift, leaving her to cope on her own.

At 4 weeks postpartum, with her nipples still cracked and sore, Mrs. I.J. felt that her milk supply was decreasing, and she started to complement each breast feed with formula milk. She became increasingly concerned, and went to the baby clinic where she saw her health visitor. She recalled the advice as being that she was worrying too much, and that "it would sort itself out". She also recalled that she was told to give the baby 5 oz. of formula milk after each breast feed, but not to complement "for too long". She was also told to miss out alternate breast feeds to save milk for the subsequent feeds.

That same week, still having received no help for her painful nipples and still under stress with her mother, Mrs. I.J. returned to her general practitioner, who prescribed Candestan cream for her nipples and sent another health visitor to visit her at home. She found this second health visitor, who advised her to reduce the complementary feeds, very helpful. However, by this stage, Mrs. I.J. was very tired and sore, she felt that her breasts were empty, and the baby was unsettled and fretful. She felt the following few days were "like a nightmare" as she felt tired and depressed, and the baby became

more demanding.

She returned to her general practitioner, who advised her to stop breast feeding; this advice was repeated by the health visitor whom she had found helpful, who called in to see her the following day. With reluctance, and feeling very upset, Mrs. I.J. stopped breast feeding. When asked if she would breast feed a subsequent baby, Mrs. I.J. replied "I don't know, after an experience like that. Could it be that I'm one of those women who just can't breast feed?"

Her comment on the care she had received was that if she had had the help she needed at the beginning, when she first complained of thrush, she would still be breast feeding.

Comment:

This case illustrates well the interactive nature of problems; the stress of a demanding mother, the absence of her husband, illness and soreness due to infection, and the advice to complement with formula milk and only give alternate breast feeds all combined to result in a distressing experience, and discontinuation of breast feeding. The care by the community midwives, and the reassurance about feeding frequency had helped Mrs. I.J. to establish feeding successfully; however, this care was not continued adequately. The advice given by her first health visitor showed a marked lack of understanding of the physiology of lactation. Despite her wish to continue, she stopped, having found the experience so distressing that she doubted if she would try to breast feed again. Early diagnosis and treatment of the infection may well have prevented this discontinuation.

* * *

Some women appear not to experience problems with breast feeding. It is of interest to examine factors in their environment which might encourage successful breast feeding.

Case Study 6

Code Number 22 Mrs. K.L.

Age 31

Third child Girl, birth weight 3.4 kg.

Social class of mother: IIIN Husband: IIIM

Mrs. K.L. lived in a farm cottage near a small village in the Scottish borders. She had two sons, of 3 and 6 years, both of whom she had bottle fed. This present pregnancy had been unplanned, but she was delighted with the new baby. Mrs. K.L. had not considered breast feeding until it was suggested to her by the midwife who gave her the baby for its first feed in hospital. Considering that it would be more economical than bottle feeding, Mrs. K.L. decided to try.

Since that point, Mrs. K.L. had experienced no problems of any sort, and looked slightly baffled when asked. She did not attend her baby clinic, as it was too far to travel, but her health visitor "dropped in" every two weeks for a visit; living in a rural community, Mrs. K.L. knew her health visitor well. Her general practitioner had also called in twice.

Her husband worked on the farm, and was available to help throughout the day if Mrs. K.L. became tired. She had constant help with housework from her mother-in-law who lived next door. There was also support from neighbours in the village who helped in practical ways.

When asked how she would feed another child, both mother and father were unhesitating in their enthusiasm for breast feeding. They said the baby was contented, fed well, and Mr. K.L. commented that the baby was "coming on faster than either of the other two".

Comment:

The case of Mrs. K.L. illustrates the benefits of a supportive environment. Although having no previous experience of breast feeding, continuous and consistent support by family, friends and by her health visitor, resulted in the mother always having someone to turn to for help. This constant support was frequently reported by the women who lived in rural areas. They knew their health visitor, who was often also the local midwife, and saw her frequently. A supportive community appears to be easier to establish in rural areas.

* * *

Despite knowledge, motivation, and family support, some women still experience problems and may stop breast feeding prematurely.

Case Study 7

Code Number 31 Mrs. M.N.

Age 30

Second baby. Girl, birth weight 3.28 kg.

Social class of mother: II Husband: I

Mrs. M.N. was a college lecturer who had previously breast fed her son, now 3, for six months. Happy with the initiation of breast feeding in hospital, and impressed with the care provided by the hospital staff, Mrs. M.N. returned home on her 3rd postpartum day anticipating no problems with breast feeding.

She found it encouraging to be visited by the community midwives, although she felt she had no particular problems; she still appreciated knowing that they would visit each day. The baby was waking every 2 hours at this stage, but Mrs. M.N. accepted this as normal, and carried on breast feeding as often as the baby required it.

Mrs. M.N. was a member of the National Childbirth Trust, an educational and supportive organisation for pregnant and postpartum women, and had read many books on breast feeding; her husband helped by discussing problems with her. She also had a woman friend who shared their house and helped with housework. However, the baby continued to wake and cry every 2 hours, and Mrs. M.N. began to get very tired. She also discovered a lump in her breast at two weeks, which her general practitioner examined and decided to check weekly throughout her breast feeding; no further investigations were planned until she stopped breast feeding. The discovery of this lump resulted in Mrs. M.N. becoming tense and anxious, in addition to her physical tiredness with the baby's frequent feeding. She also recalled that it was at this stage, 2 weeks postpartum, that her three year old child started to become difficult and disruptive. As the frequent feeding continued throughout the next two weeks, Mrs. M.N. found herself wondering if she did have enough milk. In spite of her own knowledge, and her husband's support and reassurance, her increasing tiredness undermined her confidence.

At 4 weeks, Mrs. M.N. took the baby to the baby clinic. The health visitor weighed and examined the baby, and Mrs. M.N. recalled that she was told that there was no problem with feeding, the baby was healthy and growing, that the baby did not need extra bottle feeds, and that the frequent feeding would settle. Reassured by this, Mrs. M.N. was quite prepared to persevere with breast feeding. Discussion with her National Childbirth Trust group and continuing support from her husband helped her through the difficult period until six weeks, when the two hourly feeding stopped. Although still anxious about her breast lump, and distracted by her other child, Mrs. M.N. reported that

once the extreme physical tiredness had passed, she was able to continue to breast feed.

Commenting on her care in these early weeks, Mrs. M.N. said that the most important factor was the detached, professional and encouraging advice from her health visitor. Other support, such as that provided by her husband, was also important. Discussion with other mothers in the National Childbirth Trust prevented minor difficulties from becoming major problems by talking them over before they became worse. Reading books, although helpful, she found "prescriptive", dispensing advice according to rules. Her experience had now shown her that "babies are different, and there is no right answer".

Comment

This case illustrates the importance, firstly, of correct expectations of baby behaviour; Mrs. M.N. was not immediately anxious about her baby feeding every two hours. It also shows clearly the need for the "detached , professional and encouraging advice" which Mrs. M.N. found so helpful. An interaction of stressful factors, including anxiety regarding her health and the difficult behaviour of her three year old child, although it did lead her to question to adequacy of her milk supply, did not result in discontinuation; accurate and timely advice and support encouraged her to continue. It is of interest that Mrs. M.N. found it more helpful to talk with other mothers about problems than to rely on the often dogmatic advice in books.

* * *

Case Study No. 8

Code No. 32 Mrs. O.P.

Age 36

First baby. Girl Birth weight 3.51 kg.

Breast fed 5 weeks

Mother: Social Class II Father: IIIN

Mrs. O.P. was discharged home on her 6th postnatal day following a fairly uneventful stay in hospital. She had found the unrestricted visiting allowed by the hospital at this time quite difficult due to her embarrassment at breast feeding in the presence of any man other than her husband. However, convinced that breast feeding was "natural" and best for the baby, she persevered in spite of her visitors until she returned home to relative privacy.

Although her husband was helpful and supportive, there was a constant background of tension with Mrs. O.P.'s own mother, who was emotionally demanding and difficult.

During the second postpartum week, Mrs. O.P. recalled the baby feeding frequently and the community midwife advised her to give the baby a dummy to suck. This helped for a few days, but the unsettled periods continued. Concerned by this "frequent" (3 hourly) feeding, Mrs. O.P. took the baby to the clinic, where she spoke to her health visitor. The baby was weighed and found to have gained one pound in three weeks. Mrs. O.P. recalled being told that the weight gain was below normal and that she might need to substitute with formula milk, as it was possible that she did not have enough milk. Mrs. O.P. decided to persevere with breast feeding, did not introduce artificial feeds at this point, but she was now concerned that she did not have enough milk.

The three hourly feeding continued. Her health visitor called in and reinforced the advice that Mrs. O.P. ought to complement with bottle feeds, on the basis of the three hourly feeding and the single weighing at the clinic.

Becoming increasingly concerned and feeling anxious and under stress from the demands of her own mother, Mrs. O.P. took the baby to a dinner to celebrate her parents' anniversary. When the baby cried, an older relative said "that baby is hungry", Mrs, O.P. gave the baby a bottle feed, and over the following few days gave supplementary feeds night and morning. Her milk supply decreased and she stopped breast feeding at five weeks, believing that she did not have enough milk.

Mrs. O.P.'s comment on the care she received was that the advice she received was prescriptive: "they go too much by the book, not by experience; all babies are different".

Comment:

Mrs. O.P. found that her expectations of her baby's behaviour did not match with reality. Unlike Mrs. M.N., she did not accept the three hourly feeding as normal, and this feeling was reinforced by her own family who undermined her confidence in her ability to feed successfully. The advice offered by the clinic staff and by her health visitor at home, on the basis of a single weight measurement, did nothing to reassure her. The introduction of bottles inevitably reduced her own milk supply, resulting in insufficient milk.

* * *

Although under particularly severe stress, some women appear to cope with problems. These women invariably have some means of extra support and care.

Case Study No. 9

Code No. 3 Mrs. Q.R.

Age 32

First baby. Girl; birth weight 3.12 kg.

Social Class of Mother: IIIN Husband II

Mrs. Q.R. was under particular stress throughout her breast feeding. Her husband was chronically ill with multiple sclerosis, having had an initial acute attack of the disease when Mrs. Q.R. was 3 months pregnant. He was now dependent on a wheelchair, with little lower motor ability, and he relied heavily on the care from his wife.

Mrs. Q.R. found her postnatal care in hospital particularly helpful. She recalled that the nurses spent time teaching her the technique of breast feeding, and that the ward sister gave her emotional support. Her husband was enthusiastic; "he thought it was marvellous".

On her return home at 6 days, Mrs. Q.R. was tired and her perineum was painful and uncomfortable. There were no problems with her milk supply, however, and she continued to feed. She was responsible for the physical care of her husband, but managed to fit in the breast feeds around this. She had a home help every morning, who dealt with the housework and shopping; "I could never have coped without her".

Mrs. Q.R. did not like to take the baby to the clinic. She recalled that it was cold, and that she had to wait so long to be seen that she was concerned about having left her husband on his own. However, her health visitor called in regularly every week to see her at home, and was a constant encouragement with breast

feeding. Fortnightly visits to her general practitioner also helped her to cope with her feelings about her husband's illness. Mrs. Q.R. described her fear that the physical closeness of breast feeding might make her husband jealous, and after discussion with her health visitor she included her husband in the feed, by feeding with him and giving him the baby to cuddle in the middle of the feed. This, she found, alleviated her anxiety about this aspect, and her husband appeared to enjoy this involvement.

Although she continued to be tired and stressed, Mrs. Q.R. was still breast feeding at 12 weeks, and hoped to continue for another few months.

Comment:

The remarks by Mrs. Q.R. regarding the difficulties of attending the clinic, particularly when constrained by other responsibilities, were repeatedly mentioned by other mothers. It appeared to be especially difficult for women with other children to attend regularly when attendance often involved waiting for an indefinite period. The problem of clinic facilities are discussed in 2.2.3

However, Mrs. Q.R. found that the care she was offered, both by the health and the social services, helped her to overcome and cope with a distressing situation. The combination of practical care by her home help, emotional support from her general practitioner and encouragement and advice from her health visitor, resulted in successful continuation of breast feeding in spite of problems.

* * *

9.4 AN ILLUSTRATION OF THE ADVICE GIVEN TO BREAST FEEDING WOMEN

Although it is, as previously stated, often difficult to measure advice and response to problems in any quantifiable form, an illustration is offered in this section of one way in which advice may be related to outcome of breast feeding. The advice given to mothers regarding the baby being unsettled or feeding frequently was examined. The main categories of advice, given from any source (including health professionals) and also given by health professionals alone, are shown in Table 37. Fifty-nine (61%) women complained of the baby being unsettled or feeding frequently at some time, and this table shows the type of advice given according to whether or not the women continued to breast feed; 22 of these mothers stopped, and 37 continued.

Mothers who stopped breast feeding were more likely to have been advised to give extra bottles of milk before they stopped feeding. One interesting factor was the number of women who were advised to give a bottle, and found that the baby refused (Table 38); of the 11 mothers who reported this, only one stopped breast feeding. There was no particular relationship with social class among mothers of babies who refused to take the bottle.

Mothers who were encouraged to continue or to increase feeding frequency, either by health professionals or by other sources, continued to feed. All mothers who reported being actively discouraged at this stage discontinued breast feeding.

Mothers who continued to breast feed were often given advice about increased rest and diet. One point of interest is that mothers who were advised to give solids, rather than bottle milk, to supplement the diet, all continued to breast feed.

TABLE 37 ADVICE GIVEN BY HEALTH SERVICE STAFF AND BY ALL SOURCES (INCLUDING HEALTH SERVICE STAFF) TO MOTHERS COMPLAINING OF UNSETTLED BABY/ FREQUENT FEEDING (n = 59)

ADVICE GIVEN	BY HEALTH SERVICE STAFF				BY ANY SOURCE			
	MOTHERS WHO STOPPED (n = 22)		MOTHERS WHO CONTINUED (n = 37)		MOTHERS WHO STOPPED (n = 27)		MOTHERS WHO CONTINUED (n = 37)	
	n	%	n	%	n	%	n	%
GIVE BOTTLE	11	50	6	16	18	81	13	35
ENCOURAGED TO CONTINUE/INCREASE FREQUENCY	-	-	5	13	1	4	21	57
DISCOURAGED FROM CONTINUING	2	9	-	-	5	23	-	-
REST & DIET ADVICE	1	4	8	22	2	9	10	27
GIVE SOLIDS	-	-	2	5	-	-	7	19

TABLE 38 RESPONSE TO ADVICE TO "GIVE BOTTLE" BY EITHER HEALTH SERVICE STAFF OR BY ALL SOURCES (INCLUDING HEALTH SERVICE STAFF) TO MOTHERS COMPLAINING OF UNSETTLED BABY/FREQUENT FEEDING

RESPONSE TO ADVICE TO "GIVE BOTTLE"	ADVICE GIVEN BY HEALTH SERVICE STAFF				ADVICE GIVEN BY ANY SOURCE			
	MOTHERS WHO STOPPED (n = 22)		MOTHERS WHO CONTINUED (n = 37)		MOTHERS WHO STOPPED (n = 22)		MOTHERS WHO CONTINUED (n = 37)	
	n	%	n	%	n	%	n	%
BOTTLE GIVEN	11	50	1	3	17	77	3	8
BABY REFUSED BOTTLE	-	-	5	13	1	4	10	27

These descriptive data suggest that although women do have multiple and interactive problems, these do not inevitably result in discontinuation of breast feeding. Many women continued to breast feed throughout problems if given appropriate, consistent and timely support. Women appeared to reach a point of tiredness, pain and stress, which could either be alleviated by care and consistent support or which could result in discontinuation of breast feeding if aggravated by lack of care. This may help to explain the importance of the partner as a constant source of support; he is often there at any time of crisis (Howie et al, 1982). When he is not there, problems may be aggravated. This is supported by the difficulties described by the two single women interviewed (case numbers 56 and 60) who had no consistent sources of support.

Some women appeared to avoid problems but these women invariably had some background of good supportive care; problems may not develop if they can be discussed, and practical help given, at an early stage. This is in agreement with a suggestion by Mrs. M.N. that discussion with friends, or with a support group such as the National Childbirth Trust, prevents minor difficulties escalating into full-scale problems.

Mothers' expectations of babies' behaviour, such as the amount of crying, and the number of feeds required in a day, appeared to be important. Mrs. O.P. complained of "frequent feeding" when the baby was waking every three hours, while Mrs. M.N. expected the baby to feed every two hours. As Mrs. O.P. herself said; "all babies are different", and this results in

difficulty if advice is dispensed, either by books or by staff, on a prescriptive basis. It may also explain the beneficial effects midwifery staff in hospital might have on the long term success of breast feeding (8.2.6) by telling mothers what to expect and how to cope. Janis (1974) suggests that stressful situations that are expected are more easily coped with than those that are not.

It is of interest to note that continuous stress did not necessarily lead to discontinuation of breast feeding. One other woman interviewed (case no.29) whose husband was seriously ill, also continued to feed and coped well, with outside resources and support and systems such as a home help, and help from family and friends. Another woman, however, whose husband became ill while she was breast feeding (case no.66) found that her milk supply diminished, and she stopped breast feeding soon afterwards. This suggests that continuous and expected stress may have a different effect on breast feeding than acute stress.

Parous women may have extra difficulty due to a disruptive effect of older children (case numbers 67 and 72); however, this disadvantage may be balanced by previous experience and familiarity with babies and breast feeding. Previous success in breast feeding was associated with success in the present lactation (8.2.5); Mrs. I.J. illustrates the discouraging effect that a bad breast feeding experience might have.

Many women reported that embarrassment was a problem both when trying to breast feed in the presence of visitors, and when outside their own homes. Many women remarked that this increased their feeling that breast feeding was restricting.

The introduction of solids to the baby's diet did not appear to be associated with cessation of breast feeding. The

introduction of regular bottle feeds, however, either as complementary or supplementary feeds, often seemed to result in rapid weaning from the breast. It is difficult to differentiate whether bottles are given because the milk supply is failing, or whether they lead to reduction of milk supply due to reduced nipple stimulation. It is likely that both alternatives are partly true; what is not clear, however, is what might happen to the failing milk supply if the mother is given adequate support and advice. This support and advice might include discussion of any stressful factors, why the mother feels that her milk supply is failing, and description of the supply and demand mechanism of breast feeding (Chapter 1).

Some mothers found that although they attempted to give a supplementary bottle feed, the baby refused to take the bottle, with the result that the mother had to persevere with breast feeding. It has been suggested (Stanway & Stanway, 1978) that mothers who report that their babies refuse the bottle are more motivated to succeed. This study provided no evidence for this, and neither was there any relationship with social class and mothers who reported the baby refusing the bottle.

The variety of home care offered by the health service to women is of interest. Some women received a visit weekly or every two weeks, while others received no home visits. Some women found the clinic visits helpful, even if only to weigh the baby (Chapter 8, Section 6) while others refused to take the baby to wait in a cold and uncomfortable room. The Sheldon Report (1967) suggested that clinic facilities should be improved; these data found that many clinics are still inhospitable and cold.

The reluctance to attend the clinic on the part of some mothers support statements by Ennals (1978) and Arneil (1965) regarding the need to re-examine the structure of child care in the clinic setting.

> "If the effectiveness of advice from the Child Welfare Clinic is to be significantly increased it is essential for the health visitors to go more often into the homes of those who do not attend and give advice there".
>
> Arneil (1965)

Women do require reassurance that the feeding is going well, as indicated by the number of women who take the baby to the clinic simply to have her weighed (Chapter 8, Section 6).

Some of the associations of success with higher social class can be seen in the different attitudes to and expectations of care from the health service. It appears that it may not be the overall provision of care, as measured by the number of visits, but factors such as the availability of care, the advice that is actually offered, and whether or not the mother acts on this advice, that are important.

Better educated women, being more articulate, appeared to be able to explain their problem and to be persistent in seeking the right advice; they could also differentiate between helpful and unhelpful advice. Mrs. M.N. commented that her general practitioner was helpful because "he treated me like a thinking being". Other women (for example case no.84) accepted the advice that was given, or may not have made the initial effort to get in touch with the services. This is in agreement with the evidence of the Black Report (1980) which showed that women in lower social classes seek out preventive care less than women in upper social classes.

Women in lower social classes also reported a greater influence of family and friends (for example Mrs. O.P. and 8.2.6).

These case studies illustrate the importance of the availablity and the quality of professional advice and support. Although the amount of care provided is similar for all social groups, the quality of care given and what was actually said to the mother varied widely. Those women who were given accurate and timely advice were more likely to overcome their problems and continue to breast feed. This appears to be similar to the process described by Luker (1980), who found that the "microprocesses" of the interaction between health visitor and client, what was actually said and the manner in which it was said, was the important factor in the provision of care. In other words, it is not sufficient to make care available; it is essential to ensure that advice is accurate.

CHAPTER 10

SUMMARY AND CONCLUSIONS

The programme of research described in this thesis was designed to examine factors which affect success in breast feeding, both in hospital and at home. Each of the five studies are discussed individually in the text, but because they are closely related to each other, this chapter presents a synthesis of the findings in summary form.

10.1 CONCLUSIONS

10.1.1 Factors related to success in hospital

1. The results of studies A and B confirm the positive associations between frequent suckling, the early establishment of milk flow and the success of breast feeding. They also demonstrate the confounding association of social class with these factors, and suggest that although management policies in the immediate puerperium may influence the success of breast feeding, factors in the maternal environment may be equally important.

2. Study C examined three different policies of giving additional fluid to the baby in the early puerperium and provided no evidence to support the routine administration of extra fluids to all breast fed babies. The study also suggested that, irrespective of early management, social class remained closely associated with the duration of breast feeding.

These three studies indicated the need to examine environmental factors which contributed to the success or failure of breast feeding.

10.1.2 Factors related to success at home

1. Further confirmation of the importance of the events occurring after discharge from hospital was provided in Study D which found that mothers who were given additional home support in the form of fortnightly visits, breast fed their babies for a longer time, introduced supplementary food later, and did not stop feeding due to "insufficient milk".

Two important factors in this success appeared to be the continuity of the postnatal care provided, and the predictable appointment system used.

2. In Study E, a detailed examination was carried out in a consecutive series of breast feeding mothers to examine how their environmental circumstances were related to breast feeding. The study showed that nursing mothers encountered many problems, often multiple and interactive, which caused some mothers to discontinue breast feeding against their own expressed wishes.

3. Mothers most often gave physical problems, a crying baby, or "insufficient milk" as the main reason for premature discontinuation. However, detailed analysis showed that problems were many and varied, and that to analyse the problems of nursing mothers only in terms of "insufficient milk" was a major over-simplification.

4. Breast feeding mothers had a peak incidence of problems during the second postpartum week, and the most common being maternal tiredness, and a crying, unsettled baby. A further peak of problems occurred around weeks 7-8 postpartum for mothers in lower social class groups.

5. A common solution to the problems of nursing mothers was the introduction of supplementary food in the form of bottles but this was associated with a high incidence of premature discontinuation of breast

feeding. The administration of solids did not appear to be so strongly related to premature discontinuation.

6. Discontinuation of breast feeding and the change to bottle feeding was often an inappropriate response to the problem; only half of the mothers who discontinued breast feeding reported any improvement in the baby's behaviour.

7. Accurate expectations of the baby's behaviour could be of great help by preventing the undermining of the mother's confidence in her ability to breast feed successfully.

8. Social class based on paternal occupation was more discriminating than that based on maternal occupation. This suggests that factors in the immediate environment were of greater importance than the mother's level of education and upbringing in determining her ability to breast feed successfully.

9. Other variables were asssociated with duration of breast feeding such as the timing of and reasons for deciding to breast feed, the age of the mother and previous breast feeding experience and these factors could be used to build a picture of "at risk" mothers in most need of additional support.

10. Continuation of breast feeding was strongly dependent on the type and timing of advice and support offered in response to problems. Mothers did not often find the help offered to them by the health services to be useful. There was no positive discrimination in distribution of care in favour of those women most at risk. Clinic services in particular were criticised as being overcrowded and were often used simply to weigh the baby.

11. The availability and quality of care offered by the health services varied widely, and these appeared to be critical factors in the continuation of breast feeding.

12. It was possible for some women to breast feed successfully in spite of considerable problems, given adequate support and advice.

13. An important measure of support could be given by a variety of sources, including husbands, home helps, family, friends and postnatal support groups. However, the care of a detached and informed professional given at the right time could be the critical factor in determining the difference between success and failure.

14. Advice should be flexible and related to the circumstances of the individual mother and the behaviour of her baby. Rigid and prescriptive advice was often inappropriate and unsuccessful.

10.2 Diagrammatic summary of conclusions

Figure 45 shows a diagrammatic summary of the main conclusions of this programme of research; mothers may experience a complex variety of adverse or supportive factors, physical or emotional, at any time throughout breast feeding. However, lack of care or inaccurate advice may neutralise any supportive factors and reinforce any adverse factors, while provision of consistent care and accurate advice reinforces supportive factors and may help to overcome any adverse factors. This care must be provided throughout breast feeding, from the mother's time in hospital until she herself wishes to stop breast feeding. Now that so many mothers are being encouraged by their midwives, health visitors and G.P.'s to breast feed, it is the responsibility of these health professionals to ensure that there is adequate provision of supportive care to ensure successful breast feeding.

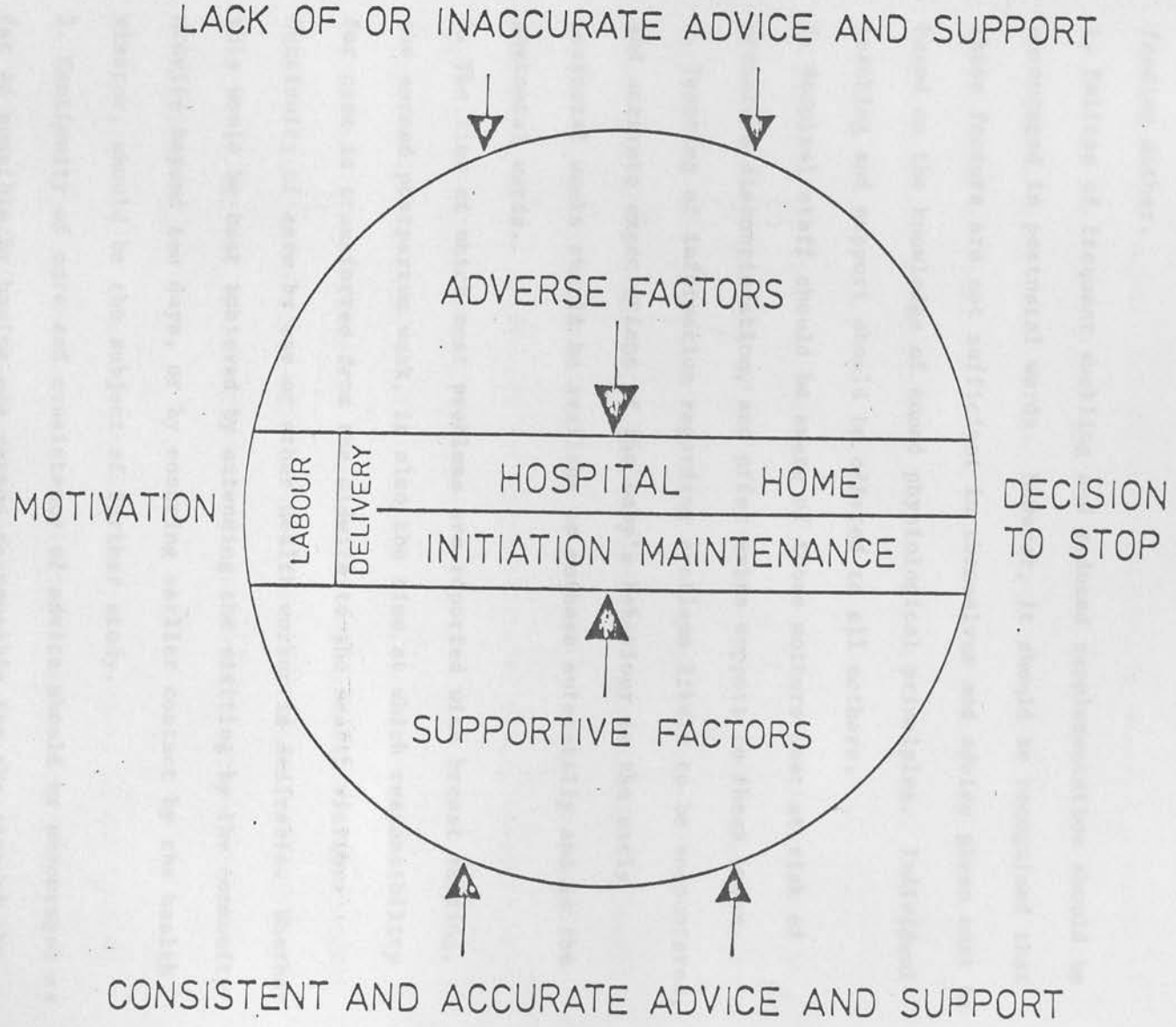

Fig 45. A diagrammatic representation of the main conclusions of this research, showing the opposing forces of adverse and supportive factors throughout breast feeding and the overriding effect of support and advice (see 10.2)

10.3 Implications for care

A central objective of this work was to examine practical ways of improving success in breast feeding. In the light of the findings, and the professional judgement of the researcher, implications for care are proposed for health professionals involved in the care of the breast feeding mother.

1. Polices of frequent suckling and reduced supplementation should be encouraged in postnatal wards. However, it should be recognised that these factors are not sufficient in themselves and advice given must be based on the knowledge of sound physiological principles. Individual teaching and support should be offered to all mothers.

2. Hospital staff should be aware of those mothers most at risk of premature discontinuation, and offer extra support to these women.

3. Teaching of information regarding problems likely to be encountered, and accurate expectations of the baby's behaviour in the early postnatal weeks should be availabe to mothers antenatally and in the postnatal wards.

4. The time at which most problems are reported with breast feeding, the second postpartum week, is also the time at which responsibility for care is transferred from the midwife to the health visitor. Continuity of care by one or other health worker is desirable. Whether this would be best achieved by extending the visiting by the community midwife beyond ten days, or by ensuring earlier contact by the health visitor, should be the subject of further study.

5. Continuity of care and consistency of advice should be encouraged as far as possible by having one person responsible for the care of the breast feeding mother at home. Although the organisational difficulties of this are considerable, the benefits to the mother of

establishing a trusting relationship should be regarded as a priority in the planning of care.

6. The present structure and organisation of home visits could be changed for the benefit of the mother. Predictable visits, that is, visits by appointment, are not only preferred by women, but appear to be more successful, and may be less wasteful of scarce resources.

7. Possible discrimination in the provision of care in favour of women most at risk of premature discontinuation should be practised by the health professionals concerned. However, it is recognised that almost all women require some help and support from the health services.

8. The priority given to the importance of the child health clinic must be questioned. Mothers do not often find clinic visits helpful, and complain of the conditions they experience there. Given the effectiveness of home visiting, and the unique function of the health visitor in providing this service, it may be preferable to reduce the commitment of the health visitor to provision of clinic services, and increase the level of home visiting.

9. All advice given by midwives, health visitirs and G.P.'s must be soundly based on a knowledge of the physiological principles of breast feeding. Health professionals should be aware of the difficulty of breast feeding and the variety of problems which are likely to be encountered.

10. Advice to give extra food to the baby, especially in the form of bottle milk, should be given only following close observation, and in the full knowledge that extra bottles may well result in further reduction of the mother's own milk supply.

11. Practical resources, such as increased home help services and facilities for child care for older children, may increase breast feeding success by alleviating the major problem of maternal tiredness.

12. The utilisation of informal postnatal support groups, such as those organised by the National Childbirth Trust, will give mothers access to information and general advice from other more experienced mothers. These groups, at present usually available only to more educated women, could be encouraged and fostered in all areas by the health service staff as an effective and inexpensive method of increasing success in breast feeding.

10.4 Suggestions for further research

Further research is required to clarify some of the points arising from findings of this research programme.

1. It is important to further identify the effectiveness of various forms of support. Study D indicated some possible mechanisms to increase success in breast feeding. However, a larger study, involving many more mothers and a group of health visitors, is required to ascertain the widespread effectiveness of this structure.

2. Expansion of the use of "at risk" predictors, together with positive bias of care towards those most at risk of premature discontinuation of breast feeding, should be further investigated.

3. A more detailed examination of the effectiveness of clinic resources versus increased home visiting by health visitors is required.

4. Research is required to determine how services could be reorganised to provide maximum continuity of postnatal care.

* * *

It is likely that many of the problems reported in this work, especially those of maternal tiredness and adverse mood changes, are not particular to breast feeding women, but to all new mothers. Postnatal depression is not confined to women who breast feed;

"Few mothers know that depression is the most common complication of the period following childbirth".
(Wellburn, 1980)

Given the well-established connection between stress and breast feeding, it is possible to speculate that the variable of successful breast feeding used in this research is simply one measure of psychological well-being which is more difficult to identify in women who bottle feed their babies. It is important to consider whether or not breast feeding has a specific effect on tiredness and depression (Alder & Cox, 1982), or whether these feelings are experienced by all women.

Further research in postnatal care should therefore not be confined soley to breast feeding women. It is essential to investigate care which would be of benefit to all mothers.

10.5 Summary

The programme of work presented in this thesis examines requirements for successful breast feeding. It was found that although management policies in the immediate puerperium were important, the social environment and background of the mother as measured by social class remained the critical variable in the subsequent duration of breast feeding.

Women, regardless of social class, given additional care in the form of predictable home visits by a health professional, continued to

breast feed and did not complain of "insufficient milk". However, many women given routine postnatal care experienced multiple and interactive problems with breast feeding and reported considerable variations in the amount and quality of care provided by the health services. Success in breast feeding was closely associated with the quality of care provided.

The present research clearly suggests that, to provide the most effective support for those women most in need, a change in the structure of care is required. Rather than an increase in the amount of support, a reorganisation of existing services would be an effective, practical and economic solution.

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PUBLICATIONS

The following publications resulted from research which helped to generate, or arose directly from, the programme of work described in this thesis.

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APPENDIX I

THE BENEFITS OF BREAST FEEDING

It is now widely acknowledged that breast feeding is the best method of feeding an infant, both in developing societies where alternative feeding methods carry their own dangers and difficulties for the child, and in Western society. The evidence in favour of breast feeding has provoked two recent statements on infant feeding.

1. The DHSS report (1974) "Present Day Practice in Infant Feeding" having reviewed the arguments for breast feeding in Western society states;

"The members of the Working Party are unanimous in their opinion that the best food for babies is human breast milk".

2. The WHO/Unicef recommendations (1979) state the case for breast feeding world wide;

"Breast feeding is an integral part of the reproductive process, the natural and ideal way of feeding the infant and a unique biological and emotional basis for child development...It is therefore a responsibility of society to promote breast feeding and to protect pregnant and lactating mothers from any influences that could disrupt it".

This appendix reviews the major benefits of breast feeding. They will be discussed in the following categories:-

1. Nutrition
2. Protection
3. Economics
4. Birth spacing
5. Mother-infant interaction

A1.1 NUTRITION

Human milk is a complex substance; studies of its nutritional content show that its composition varies not only according to stage of lactation and time since last feed, but that it is also affected by the method of collection. Milk samples expressed manually, or by pump, or collected as "drip" milk while the baby feeds, differ significantly in composition. (Gibbs et al, 1977).

However, in spite of the difficulties of measurement of constituents, the nutritional superiority of breast milk over artificial foodstuffs is well established. (For review see DHSS, 1974; Jelliffe & Jelliffe, 1978; Population Reports, 1975; Vorherr, 1978).

The main areas of difference are shown in Table A1. Mature human milk is compared with colostrum, which is secreted for the first 48-72 hours, and with cows milk. For interest, constituents of popular modified formula milks are also included.

(i) Protein

The protein content of human milk differs both in quality and type from cow's milk. Antibody protein (lactoglobulin) reaches particularly high levels in colostrum, and is destroyed in the process of manufacturing formula food. Antibody protein is discussed later (A1.2). Breast milk is higher in whey proteins (lactalbumen and lactoglobulin) and lower in casein than cow's milk. The lower amounts of casein allow better milk curdling with faster and more efficient gastrointestinal digestion. Whey proteins provide more essential amino acids for growth and development; they are biologically the most valuable protein nutrition (Vorherr 1978).

(ii) Fat

Fat is the main source of calories in human milk (Hambraeus 1980). Breast milk fat is almost completely digestible, in contrast to the

TABLE A1 CONSTITUENTS OF MATURE HUMAN MILK, COLSTRUM, COW'S MILK, AND TWO BRANDS OF FORMULA MILK.

QUANTITIES GIVEN PER 100 ml.

	ENERGY k. CALS.	LACTOSE g.	PROTEIN			FAT			MINERALS			VITAMINS		
			TOTAL g.	CASEIN g.	LACTO-GLOBULIN	TOTAL g.	SATURATED g.	UNSATURATED g.	Na mg.	K mg.	Ca mg.	A ug.	C mg.	E mg.
HUMAN MILK (NATURE)	65	7	1.2	0.4	0.2	3.8	1.9	2.2	15	57	35	75	5.0	0.25
COLOSTRUM	57	5.5	4.1	1.6	3.5	2.9	1.4	1.5	48	74	39	151	5.9	1.5
COW'S MILK	66	4.8	3.3	2.8	0.3	3.7	1.1	3.0	58	145	130	41	1.1	0.07
SMA GOLD CAP	65	N.A.	1.5	N.A.	-	3.6	N.A.	N.A.	15	56	44	80	5.8	N.A.
COW & GATE PREMIUM	65	N.A.	1.8	N.A.	-	3.5	N.A.	N.A.	23	62	47	80	5.0	N.A.

SOURCES: Vorherr (1978)
Jelliffe & Jelliffe (1974)
Present Day Practice in Infant Feeding (1974)

butter fat in cow's milk which is not well absorbed by infants (Vorherr 1978).

Actual fat intake by the infant is difficult to determine as the fat content of the milk varies from beginning of the feed, becoming more concentrated throughout the feed. This has been postulated as an appetite control mechanism, as the baby learns to distinguish taste and texture in a way that is not possible for bottle fed babies, (Hall 1975) and this may help to explain the lower incidence of obesity reported in breast fed infants.

(iii) Carbohydrate:

Lactose is the predominant carbohydrate in breast milk, in contrast to formula milk which is relatively high in sucrose (Hambraeus 1980). There are 4 main functions of lactose:

1. It enhances calcium absorption, and may be implicated in the prevention of rickets
2. Its high solubility conserves maternal water.
3. It is metabolised to galactose, constituent of the galactolipids, which are needed for CNS development.
4. Together with the "bifidus factor' in breast milk, it promotes growth of lactobacilli in the gut, thereby providing a beneficial medium for intestinal function (Jelliffe & Jelliffe, 1978; Vorherr, 1978).

(iv) Minerals:

Cow's milk is higher in sodium, potassium and calcium than human milk; a baby fed on cow's milk is at risk of developing metabolic disorders such as hypernatraemia and hypocalcaemia. However, as shown, in Table A1, modified formula milks have greatly reduced the

concentration of these minerals. The risk remains however, if the feed is prepared incorrectly, and where overconcentration of feeds may lead to dehydration. (Jelliffe & Jelliffe 1978).

Hypocalcaemia and neonatal tetany are almost exclusively associated with bottle feeding (DHSS 1974).

(v) Vitamins:

Cow's milk is lower in the essential vitamins than breast milk; formula feeds require to have additional vitamin supplements, as vitamins A, C & D are heat labile or lost in the manufacturing process (DHSS 1974).

Low levels of vitamin E in cow's milk and formula milk may be implicated in the sudden infant death syndrome, or cot death (Money 1978).

Summary: Nutrition

Nutritionally, breast milk is the ideal food for the young infant. However, modified formula milks now come very close to an approximation of the important factors. Thus the nutritional importance of breast milk may be more relevant in developing societies where modified milks are expensive and difficult to prepare (Chetley 1979), and where infant malnutrition is strongly associated with artificial feeding (Kneebone 1976, Waterlow, 1982).

A1.2 PROTECTION

Breast feeding plays an unique role in protecting the infant from infection and from allergy. Breast milk and colostrum provide the infant with not only a correctly-prepared, hygienic, nutritional foodstuff, but also with a highly developed anti-infective and protective system (Jelliffe & Jelliffe 1978).

"Breast feeding ensures a smooth transition of the baby from being entirely dependent on his mother for both his nutritional and immunologic requirements to being completely independent". (Gerrard 1974).

It has long been recognised that breast fed babies have a lower incidence of infection, with a correspondingly lower mortality rate. This effect was evident even in the 17th century (McLaren 1978), when the breast fed children of the poor had a lower mortality rate than the artificially fed or wet-nursed rich children.

Many studies have suggested that breast fed babies have a lower incidence of gastrointestinal and respiratory infections, are less at risk of developing atopic disease, and have a lower mortality rate, than artificially fed babies (for review see Gerrard 1974 & Chandra 1978). These studies can be criticised on the grounds that breast fed babies differ from bottle fed babies not only in immunological and nutritional environment, but also in social and psychological background. However, all studies find that breast fed babies have markedly fewer infective problems than bottle fed babies, both in Western and developing societies. The incidence especially of infantile diarrhoea is closely linked with feeding methods (Chandra 1979; Cox 1978). Similarly, early weaning, which appears to accompany increasing affluence in many countries, (WHO 1979) may lead to a rise in infant mortality due to increased frequency and severity of gastro-intestinal infections (Chandra 1978). Bouts of infantile diarrhoea last longer and are more severe in bottle fed infants (Waterlow 1982).

Although the protective mechanisms of breast feeding are not yet fully understood, some important factors can be discussed:

1. Breast milk requires no preparation or equipment. There is therefore no possibility of contamination of food or bottles, a factor which is especially important in developing countries where heat and poverty combine to promote conditions favouring bacterial growth (Chetley 1979). Media attention has recently been focussed on this aspect (Cross, 1981; Georges, 1979; Guest, 1981; Norton-Taylor, 1981; Ferniman, 1982).

2. Protective factors, humoral and cellular, are transferred to the infant in breast milk (McClelland 1982). Most important among the humoral factors appear to be the antibody proteins, secretory lgA and lactoferrin (Jelliffe & Jelliffe 1978). These are secreted in large quantities in colostrum, and continue to be transferred to the baby in substantial quantities throughout the course of lactation (McClelland et al. 1978). The main action of immunoglobulins appears to be their protective function within the infant's gut by interfering with the action of potential pathogenic organisms, such as E. coli. (Yap et al, 1979) This mechanism, however, is not yet fully understood.

The cellular mechanisms work both by active phagocytic action, and by release of humoral factors, slgA, interferon, lactoferrin and lysozyme (Butler, 1979).

Protection against respiratory infection may result from exclusion of cow's milk and other antigens, as lgA antibodies are not absorbed to any significant extent (Gerrard, 1974).

3. The exclusion of foreign proteins is an important factor in the prophylactic role of breast milk in prevention of atopic disease. It appears that the gut in early infancy is less able to exclude foreign protein complexes from entering the body and causing sensitisation (Gerrard, 1974). Several studies (Chandra, 1979;

Saarinen et al, 1979;for review of others see Atherton, 1980 & Chandra, 1978) have shown a lower incidence of severe atopic disease among children who were exclusively breast fed than among those who were artificially fed. Matthew et al. (1977) suggest a combination of exclusive breast feeding and an environmental allergen-avoidance regime to prevent the development of allergic reactions, especially where there is a family history of asthma or excema.

"Best protection is achieved when the infant receives breast milk alone for at least the first six months of life". (Gerrard 1974).

4. There is an association between sudden infant death syndrome, or cot death, and artificial feeding. The aetiology of this syndrome is obscure, and is likely to be attributable to a number of different factors, or combination of factors. Postulated causes include infection, (Gunther, 1976), toxaemia, electrolyte imbalance, apnoea during abnormal sleep rhythms (Jelliffe & Jelliffe, 1978), and lack of vitamin E (Money, 1978). However, despite the lack of evidence for the aetiology, it is clear that breast feeding has an important protective function. This protective quality of breast milk must be considered when storing and treating breast milk in a milk bank for use in special care baby units: treatment may well remove some of the active immunological components (Baum, 1980; Raptopoulou-Gigi, 1977).

Summary: Protection

Breast milk is unique in its protective function. No artificial food can provide the infant with an effective immune system for the first few months of life. Although especially important in developing societies, the association of artificial feeding with atopic disease makes breast feeding of prime importance in developed societies also.

A1.3 ECONOMICS

The economic arguments in favour of breast feeding have been well

reviewed in Chetley (1979) and Jelliffe & Jelliffe (1978). These arguments are discussed on 2 levels; the national and the family.

(i) National:

Breast milk may be regarded as a natural food resource, which requires to be replaced, at a cost to the country, if not utilised. The cost of replacing this milk must also include the cost of treating the conditions which may arise as a result of bottle feeding, e.g. infantile diarrhoea and cow's milk allergy (Jelliffe 1968). It has been suggested that the greater efficiency of the lactating mother in in producing milk in comparison to a dairy cow indicates a commercial interest for lactation in developing countries due to its potential effect on the national economy (Rao 1977).

Another national effect is the loss of the contraceptive effect of breast feeding and the necessity for alternative methods of family planning (Jain & Bongaarts 1981).

These effects must be measured against the potential loss of women's labour while breastfeeding. However, increased facilities for creches while at work, child care and maternity leave for nursing mothers, (Wray 1975) may be a more acceptable alternative to this problem than recommending bottle feeding.

(ii) Family:

Some of the effects of artificial feeding on the family have been described by Chetley (1979). In some developing societies, the majority of the man's weekly working wage may be required to buy sufficient formula to feed his child. This leads inevitably to the child being underfed, or being fed with cheaper, less reliable, foodstuffs.

It has been argued (for example, Leach 1974) that the cost of bottle feeding is equalled by the cost of providing the mother with an adequate diet to replace the calories used by the baby. However, Thomson et al., (1970) show that the mother is extremely efficient in producing breast milk; together with the efficiency of the baby in using the energy of breast milk, it would appear that the caloric cost to the mother is not high. This remains an area of controversy, but recent evidence shows no clear cut relationship between maternal diet, and milk volume or composition (Hambraeus, 1980) although in cases of severe food shortage, both quantity and quality of milk may be affected (Prentice 1980).

For women in our own Western society, the day-to-day cost of infant formula; at present (1982) at least £1.30 for a packet which may last 4 days; together with the cost of bottles, teats and sterilising solutions, outweighs any dietary increase which women may require. This is acknowledged by many young mothers today who give financial considerations as an important reason for breast feeding.

A1.4 BIRTH SPACING

Breast feeding plays a fundamental part in regulating human fertility. Studies from many parts of the world (e.g. Berman et al, 1972; Cox, 1978) show a positive relationship between the duration of breast feeding, the length of postpartum amenorrhoea, and the interval between births. These studies have been well reviewed by McNeilly (1979), Rosa (1975) and Short (1981). Women who breast feed and use no artificial method of contraception have a longer birth interval than women who bottle feed, and the interval between births is related to the duration and intensity of breast feeding.

The length of delay of menstruation and of ovulation is closely related to the frequency and duration of suckling which is in return related to the introduction of supplementary food (Howie et al, 1981b). Women who suckle more frequently and for longer periods, and who introduce supplementary foods later to the baby's diet, suppress ovarian function for longer. This may explain why women in developing societies, who can suckle their babies as often as four times every hour (Konner, 1979) may have a birth spacing of four years while using no other form of contraception. Breast feeding patterns in Western society, where babies are usually suckled no more than 6 times in 24 hours (Howie et al, 1981b) result in a less reliable contraceptive action. Together with the easy availability of other forms of contraception, this reduction in reliability makes breast feeding a less attractive method of birth spacing than in developing societies. However, some groups of women, for instance those who find other forms of contraception unacceptable (Houston et al, 1980) or those who wish to space their children without use of artificial methods may benefit from this natural advantage of breast feeding.

Any alteration in traditional breast feeding patterns in societies where alternative methods of contraception are not available or not acceptable may result in rapid population growth (Howell, 1979).

"...in developing countries, we tamper with breast feeding at our peril; it is likely to have adverse effects both for the fertility of the mother, and for the health of her child".
Short (1981)

The danger of rapid expansion of population in traditional societies is of particular concern when examined in the light of increasing use of artificial feeding in these societies (1.2.1).

A1.5 MATERNAL CHILD INTERACTION

There is some evidence that breast feeding promotes a more active maternal child relationship (Klaus & Kennell, 1976; Richards, 1975). However, research in this area is particularly difficult, firstly because psychological parameters are difficult to measure, and secondly because mothers who choose to breast feed are different in many ways from mothers who choose to bottle feed. These differences include fundamental factors such as attitudes to sexuality (Newton & Newton, 1967) and social class (Bacon & Wylie, 1976).

However, breast and bottle feeding practices involve very different patterns of interaction which may have subtle and far reaching consequences (Jelliffe & Jelliffe, 1978). Early interaction between mother and baby is of fundamental importance to child development (Bowlby, 1977). Experimental work on Rhesus monkeys (Harlow & Harlow, 1962) showed that lack of physical contact with a mother resulted in abnormal social and emotional behaviour which persisted into adulthood.

Short term effects of sensory and maternal deprivation have been reported in infants in special care units, (Klaus & Kennell 1976) although long term effects are difficult to elicit. There is as yet, little evidence to link behavioural effects with feeding method; Bernal (1973) found no correlation between sleeping problems and early feeding method at 14 months.

However, although existing studies have shown no evidence of a clear cut long-term relationship between feeding method and psychological factors, it should not be concluded that such effects do not exist. Some short term effects have been noted. Dunn (1975) has shown a difference in patterns of co-ordination between mother and baby in breast and bottle feeding interactions. Breast feeding mothers not only touch, rock and smile at their babies more often, but the pattern of breast feeding mothers' actions is more influenced by the baby's suckling in the early postpartum days. This apparently increased sensitivity and responsiveness of breast feeding mothers may be significant in the development of the maternal-child relationship. Thoman (1975) describes the interactive process between baby and mother; she describes the process as two-way, with the infant having a fundamental effect on the mothers' behaviour. She suggests that mothers have to learn to respond to the baby's signals during interaction, and that primiparas are either less sensitive or less responsive to these cues than experienced mothers. The increased sensitivity of breast feeding mothers may encourage this learned interaction.

Richards (1975) showed that maternal actions are influenced by the sucking patterns of the baby. Breast feeding mothers tend to touch their babies during sucking, but not to talk to them; talking only

occurs during gaps in the sucking. In contrast, bottle feeding mothers both touch and talk more randomly, often during the sucking period.

Dunn (1975) and Crow (1979) have shown a difference in responsibility for ending the sucking bouts. In the first 10 days, bottle feeding mothers almost invariably end the sucking bout, while with breast feeding mothers it is equally likely to be the mother or the baby. The long term significance of this is not yet clear, but it may possibly be associated with appetite control and development of infantile obesity, which is in turn linked to adult obesity (Shukla et al. 1972).

It is therefore difficult to make any clear-cut judgements on the psychological effects of breast feeding. It is possible that in the multifactorial process of interaction between mother and child, breast feeding plays only one part. A bottle fed baby who receives constant loving physical contact may be well compensated for his lack of breast feeding (Richards 1975). Much work remains to be done in this field.

"There is no evidence to show that specific infant care practices have an unvarying effect on the child that manifests itself in later years."
(Schaffer, 1977)

Many mothers describe a feeling of intense closeness and warmth with their babies while breast feeding, and this remains a strong argument in its favour. In the field of psychological debate on breast feeding, perhaps MacCarthy (1964) was right when he wrote:-

" The best reason for breast feeding.....is the poetry....it is with poetry that life ought to begin".

APPENDIX 2

A DISCUSSION OF INTERVIEWING WOMEN FOR THIS RESEARCH

In the course of these studies, it was seen that traditional interview methods would not be entirely appropriate. Textbook instruction on non-involvement and non-response on the part of the interviewer and ways of handling questions asked by interviewees (Denzin, 1970) proved to be inappropriate for this group of women. Two main problems developed:-

1. The women being interviewed were a particularly interested and motivated group. As new mothers who had chosen to breast feed, they were deeply interested in the topic of infant feeding whether or not they were breast feeding at the time of the interview. This interest was reflected in the number and type of questions which they asked the researcher throughout the interview.

2. The fact that the researcher was a midwifery sister was known to the mothers. It is therefore likely that the mothers assumed an implicit bias on the part of the researcher in favour of breast feeding, although all attempts were made to remain neutral; for example, the study was introduced as being on "infant feeding", rather than "breast feeding". However, the mothers also assumed a knowledge not only of infant feeding, but of every area of baby care, growth and development, as well as general health. This was reflected in the frequent and often urgent questions on such topics as napkin rash, toilet training, immunisation and the inevitable "how do I know if I have enough milk?" A further difficulty resulted from the researcher's nursing and midwifery training, with its emphasis on therapeutic response. This made a purely observational role difficult, if not ethically wrong and practically impossible. This conflict of nurse/researcher role has been described by other nurses (Knafl & Grace, 1978) and methods of coping with this included answering all questions at the end of the

interview rather than during it. This was possible in some cases, but at times was extremely difficult. This problem is more fully described elsewhere (Houston, 1982a) and it is maintained that as this problem is inherent to this type of research, it is best used to advantage than ignoring it. The argument is further developed by Oakley (1981b) when describing the difficulties of interviewing women. She maintains that the goal of finding out about people is best achieved when the interviewer/interviewee relationship is non-hierarchical, and the interviewer is prepared to invest his/her own personal identity in the relationship. Detachment is particularly difficult, and not very helpful when the women interviewed are intensely interested, often anxious and in some cases lonely and wishing to talk. Practical difficulties often intervened in the interviews presented in this research: the toddler would fall over and cry, the baby would be sick, or a meal need to be cooked. Under these circumstances, it was impossible to keep to the detached, non-involved "interviewer" role; help was offered, and usually it was accepted. This in itself gave insight into the practical problems of the mothers, and at the same time increased their confidence in the relationship, and their willingness to talk. Under these circumstances, Oakley maintains, the use of prescribed interviewing practice is morally indefensible, as well as being unproductive in eliciting information, and these problems, when examined honestly:-

> "expose the general and irreconcilable contradictions at the heart of the textbook paradigm".
>
> (Oakley, 1981b)

APPENDIX 3

FORMS AND INTERVIEW SCHEDULE FOR STUDY E

FIGURE A 2

FORM USED FOR RECORDING WARD DATA - STUDY E

BREAST FEEDING SURVEY

WARD: ..... DATE: .....

(Addressograph if possible)

ate of elivery	Time	Type	Birth Weight	Sex

Name:
Address:
Ref. No.:
D.o.B.:
Parity:

ime of 1st suckling: ..... Tel. No.: .....

reviously Breast Fed. YES / NO Less than 4 weeks / More than 4 weeks

edical & Obstetric
Complications:

arital Status: ..... Maternal Occupation: .....

usband's Occupation: ..... G.P.'s Name: .....

aby's eight	Day of Weighing	Date of Discharge

On Discharge

Fully breast feeding
Breast feeding + Comp.
Problems: .....
.....
.....

NY OTHER COMMENTS:-

FIGURE A 3

LETTER TO MOTHERS - STUDY E

Ward 54,
Research Area,
Simpson Memorial
Maternity Pavilion,
Lauriston Place,
EDINBURGH.

Dear

We are carrying out a survey of mothers who have had babies in the Simpson Memorial Maternity Pavilion, looking at baby feeding. It is hoped that you will be able to take part in this survey. This would involve a visit to your home by a Research Sister, lasting about one hour, to find out what has happened since the birth of your baby earlier this year.

A date and time for this visit is suggested below. It would be a great help if you would complete the form to let me know if this is convenient for you. A stamped addressed envelope is provided to return the form to me.

If this date is not convenient, perhaps you could suggest another more suitable time.

I look forward to meeting you.

Yours sincerely,

Mary J. Houston,
SISTER.

.....

NAME .....

I will/will not be available for a visit at .....

on .....

If not available:-

A more convenient time would be

Date .....

Time .....

FIGURE A 4

INTERVIEW SCHEDULE - STUDY E

NAME: .....

ADDRESS: .....

AGE OF BABY: (in weeks).....

SEX OF BABY (AND NAME) .....

PARITY: .....

AGE: .....

HUSBAND'S OCCUPATION: .....

Sort of organisation
Describe what it does
Describe what he does
How many people is he in charge of?

Employed/Self-employed .....

MATERNAL OCCUPATION: If working: .....

Before stopping work: .....

2. How are you feeding your baby now? Breast ☐

Not Breast ☐

If Breast - Section A

If Bottle - Section B

All Respondents - Section C

SECTION A - if continuing to breast feed

1. How many breast feeds do you generally give in a day? (24 hours) ☐

2. How often does this include a night feed? (12 M.N.-6 a.m.) ☐

3. Have you introduced any extra feeds? Yes ☐
   No ☐
   If yes (a) what?

   Describe bottles: .....
   ..... Bottles ☐

   Solids ☐

   Describe solids: .....
   .....

   (b) At what age did you first introduce extra feeds? (in weeks) ☐

   (c) What was the main reason for introducing extra feeds?

   (d) Did you notice any change in the baby's breast feeding after introducing extra feeds? If so, what?

4. Have you experienced any problems with feeding your baby or not? Yes ☐
   No ☐

   If Yes (a) What were the problems?

(b) What age was the baby when these problems occurred? ..... (weeks)

(c) Did you seek advice from any source or not?

Yes ☐

No ☐

If NO - why not?

If YES:-

From whom did you seek advice?
Was any advice given?
What was this advice?
How did you feel about this advice?
What was the result of the problem/s?

5. Who do you feel was the greatest help to you at this point?

Cont/...

SECTION B - if stopped feeding

1. Did you feed your baby for as long as you wanted to? Yes ☐ No ☐

..... can we just go over the period when you cut down/stopped breast feeding? .....

2. How old was the baby when he/she stopped breast feeding altogether? (weeks) ☐

3. How old was the baby when you first introduced extra feeds? (weeks) (a) Bottles ☐ (b) Solids ☐

4. What was the main reason for introducing extra feeds?

5. How old was the baby when he/she started to cut down on the breast feeding? (weeks) ☐

6. How many feeds, approximately, was he/she taking every day up to that point? ☐

7. What do you think was the main reason for cutting down?

8. What do you think was the main reason for stopping?

Cont/...

9. Did anything else influence this decision?

10. Did you seek advice from any source re cutting down/stopping or not?

Yes ☐
No ☐

If no, why not?

If yes:-

(a) From whom did you seek advice?

(b) Was any advice given?

Yes ☐
No ☐

(c) If so - what was this advice?

(d) How did you feel about this advice?

11. Who do you feel was the greatest help to you at this point?

12. Would you have liked more help at this time or did you have as much help as you wanted?

Enough help ☐
Would have liked more help ☐

Cont/...

.... Can we talk a bit about how you felt at this time - when you were stopping breast feeding ....

13. How did you feel about stopping breast feeding?

14. Did you notice any change in the baby's routine or not?

Yes ☐
No ☐

If so - can you describe this change?

15. Did you notice any change in your breasts after cutting down/stopping feeding?

Yes ☐
No ☐

If yes - can you describe this change?

SECTION C - All Respondents

1. How did you feel about your baby's feeding in hospital?

2. How did you feel about your baby's feeding immediately after discharge home?

3. How often did you see your community midwife? ☐

4. Did you see the same midwife more than once? Yes ☐ No ☐

If yes - how often did you see the same midwife? .....

5. Did you have any feeding problems at this stage? Yes ☐ No ☐

If yes:-

(a) What were these problems?
(b) Did you seek advice from any source?
(c) From whom did you seek advice?
(d) Was any advice given?
(e) If so, what was this advice?
(f) How did you feel about this advice?
(g) What was the result of the problem?

6. How did/do you decide when your baby requires a breast feed?

Baby ☐
Mother ☐

7. How much of the 24 hour day does your baby normally spend asleep?

Day ☐
Night ☐
Total ☐

8. a) Does your baby regularly wake through the night?

Yes ☐
No ☐

b) Has this changed much since you came home from hospital?
Describe

9. Would you say your baby was a "good" baby or a "difficult" baby"?
And for what reasons?

Good ☐
Difficult ☐

Probe:-
Crying
Activity
Feeding
Night Waking

10. Did/do you go to your baby clinic or not?

Yes ☐
No ☐

If no, why not?

If yes: a) Who runs the clinic which your normally attend? .....
b) Do you attend any other clinic? .....
Specify reason:-

Approximately how often do you go to your routine clinic? .....

Who do you normally see there? .....

How helpful do you find the routine clinic visits? .....

Cont/...

11. Have you ever taken your baby to the clinic with a specific problem?

Yes ☐
No ☐

If yes:-

a) What was the problem?
b) Whom did you see there?
c) What was the advice given?
d) How did you feel about this advice?
e) What was the result of the problem?

12. How often has your Health Visitor called to see you since the baby was born? ..... ☐

13. Are/were her visits by appointment, i.e. did you know in advance when she was coming?

Yes ☐
No ☐

14. Were there any times when she called when you were out?

Yes ☐
No ☐
Don't Know ☐

15. Do you see the same Health Visitor at the clinic?

Yes ☐
No ☐

16. Have you ever contacted your Health Visitor about a problem?

Yes ☐
No ☐

Cont/...

16. Cont/...

If Yes:-

a) How did you contact her?
b) What was the problem?
c) What was the advice given?
d) How did you feel about this advice?
e) What was the result of the problem?

17. a) How often has your G.P. called to see you since the baby was born?

b) Was this in response to a request for a visit?

18. Have you ever contacted your G.P. about a problem connected with feeding?

Yes ☐
No ☐

If yes:-

a) How did you contact him?
b) What was the problem?
c) What was the advice given?
d) How did you feel about this advice?
e) What was the result of the problem?

Cont/...

19. Was there any time you would have liked advice about feeding and did not ask for help?

Yes ☐
No ☐

If yes:-

a) What was the problem?
b) When did it occur?
c) Why did you not ask for help?

20. Was there any time you would have liked advice about feeding and did not receive help?

Yes ☐
No ☐

If yes:-

a) What was the problem?
b) When did it occur?
c) Why did you not ask for help?

21. Who do you feel was the greatest help to you whilst breast feeding?

22. Do you feel anyone else affected your feeding - either to encourage or discourage you?

23. How easy or difficult do you find it to feed without interruption?

24. How many people normally live in your house with you?

Husband and child only ☐
Child Only ☐
Other ☐

Describe extra:-

Cont/...

24. (Cont/...)

If adults other than husband/wife:-

a) How does this affect family life/running of the house?

25. Have you - or have you had - any extra help in the house? Including family/friend? Yes ☐ No ☐

If yes, describe:-

26. Have you any regular commitments outside the home, which mean that you have to go out? Yes ☐ No ☐

27. Have you started work since the birth of this baby or not? Yes ☐ No ☐

If yes:-

a) How old was your baby when you started work? ☐

b) How do you think going back to work has affected your baby, if at all?

If no:-

a) Have you thought about going back to work? Yes ☐ No ☐

If yes:-

a) When do you think you would go back to work? (Age of baby) ☐

b) How do you think this will affect you baby, if at all?

cont/...

If parous

Can you tell me a bit about your other children:-

28. How did you feed them?

For how long?
Why did you stop?
And details of sex and age?

Age of child	Sex	A/F B/F	Age Stopped	Reason for stop and problems

29. When did you decide to breast feed this baby?

- Always wanted to ☐
- Before pregnancy ☐
- During pregnancy ☐
- Following delivery ☐

30. What was the main reason for deciding to breast feed this baby?

31. Did you enjoy/are you enjoying the experience of breast feeding?

- Yes ☐
- No ☐

Details - probe

32. Do/did you feed with other people present or not?

33. How have you felt in yourself since the birth of the baby?

Probe: Depression/anxiety
Fatigue
General Health

34. Have you been prescribed any tablets or medicines since you left hospital?

Yes ☐
No ☐

If yes:-

By whom?
What?
When? (weeks post-partum)
Why?
How long for?
How often?

Cont/...

35. Have you taken or are you taking any other medicines and/or tablets not prescribed by your doctor?

Yes ☐

No ☐

If yes: What?
When?
Why?
How long for?
How often?

Check List

1. Antibiotics
2. Painkillers
3. Sleeping pills
4. Tranquillisers
5. Laxatives
6. Contraceptives
7. Iron
8. Vitamins
9. Cold/cough mix
10. Other

36. Are you on any long-term medicines or tablets for any condition? e.g. asthma, epilepsy, etc.

If so, can you tell me what you are taking for this?

37. Have you had a period yet?

Yes ☐

No ☐

If yes: (a) when? (weeks post-partum)

(Check before/after stopping/cutting down breast feeding)

(b) Was this a "normal period"?

Yes ☐

No ☐

Cont/...

38. Are you doing anything to plan your family at the moment? Yes ☐ No ☐

If yes:-

a) Can you tell me what you are using for family planning?

Check List

1. Sheath
2. I.U.C.D.
3. Prog.only pill
4. Combined pill
5. Cap/diaphragm
6. Sterilised
7. Other

b) Have you used any other form of family planning since you left hospital? ☐

39. Was this baby planned or unplanned?

40. Can I just finish by asking you a bit about your smoking habits?

Do you normally smoke? Yes ☐ No ☐

Have you smoked since the birth of your baby? Yes ☐ No ☐

If yes:-

(a) approximately how many cigarettes do you smoke in a day? .....

(b) has this changed since the birth of your baby? Yes ☐ No ☐

Describe change:-

If no - a) When did you stop smoking?(weeks post-partum) ☐

b) What do you think was the main reason for stopping?

41. How do you think you would feed your next child?

FIGURE A 5

POSTAL QUESTIONNAIRE - STUDY E

S.M.M.P. SURVEY - POSTAL QUESTIONNAIRE

NAME: .....

AGE: .....

BABY'S SEX & AGE: .....

Age and sex of any previous children, and state whether breast or bottle fed:

If working, what is your occupation? .....

If not working at the moment, what was your previous occupation?
.....

What is your husband's occupation? .....

If you are still breast feeding, please complete Section A.

If you have stopped breast feeding altogether, please complete Section B.

Cont/...

SECTION A - if still breast feeding:

1. How many breast feeds do you generally give in a day (24 hours)? ☐

2. Have you introduced any extra feeds? Yes ☐
   - tick appropriate box No ☐
   If yes, please describe extra feeds:

a) How old was the baby when you first introduced extra feeds? (age in weeks) ☐

b) What was the main reason for introducing extra feeds?

3. Have you experienced any problems with breast feeding your baby or not? Yes ☐
   - tick appropriate box No ☐

a) What were these problems?

b) How old was the baby when they occurred (age in weeks?

c) Did you look for advice from any source or not?

If yes:

d) From whom did you ask advice? Yes ☐
   No ☐

e) What was the advice given?

f) What was the result of the problem?

g) How did you feel about this advice?

4. Who, if anyone, do you feel was the greatest help to you when you had these problems?

SECTION B - if stopped breast feeding altogether

1. Did you breast feed your baby for as long as you wanted to? Yes ☐
   - tick appropriate box No ☐

2. How old was the baby when he/she stopped breast feeding altogether? (age in weeks) ☐

3. How old was the baby when you first introduced extra feeds?

   Bottles ☐ (in weeks)

   Solids ☐ (in weeks)

4. What do you think was the main reason for cutting down/stopping breast feeding?

5. Did you look for advice from any source or not? Yes ☐
   No ☐

If yes:

a) From whom did you look for advice?

b) What was the advice given?

c) What was the result of the problem?

d) How did you feel about the advice?

6. Who, if anyone, do you feel was the greatest help to you when you had these problems?

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Breast feeding: success or failure

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Breast feeding: success or failure

Awareness of the important role of breast feeding in child health and the reproductive cycle, which is well documented elsewhere, necessitates an examination of the changing practice of breast feeding. This paper reviews these changing practices both in Western and developing societies, examines the problems which lead to lactation failure, and looks at factors related to success in breast feeding.

In the light of the need for practical help for successful breast feeding, the present system of support both in hospital and at home is then discussed. An alternative system of structured home support for post-natal women, which has been shown to increase the success rate of breast feeding, is outlined. The way in which this system acts is discussed and the implications for both mothers and health staff are considered.

INTRODUCTION

'Breast feeding is an integral part of the reproductive process, the natural and ideal way of feeding the infant and a unique biological and emotional basis for child development' (WHO/UNICEF 1979).

The pattern of breast feeding is changing worldwide. Many more mothers in Western society now wish to breast feed than in previous years, perhaps influenced by the recent awareness of the importance of diet and health, and the emphasis on natural foods. However, many mothers fail to lactate for as long as they wish, depriving both their babies and themselves of the well proven natural benefits of breast feeding.

In the developing countries, the change in pattern is perhaps more important. Many mothers are now choosing to bottle feed their infants from birth, and those who do start to breast feed are in increasing danger of early failure of lactation. In this situation, where malnutrition and infection are ever present, breast feeding can mean the difference between life and death for the infant.

THE INCIDENCE AND DURATION OF BREAST FEEDING

Western societies

Following a rapid fall in rates of breast feeding in the 1920s–1930s, due perhaps in part to the increasing emancipation of women and in part to the availability of dried milks, Western 'developed' societies now show a consistent increase in numbers of women choosing to breast feed their own babies. This is well documented in the Department of Health and Social Security's (1974) report, 'Present day practices in infant feeding' and in studies from Sweden (Sjolin *et al.* 1977), London (Coles *et al.* 1978), USA (Auerbach 1979), Edinburgh (Howie & McNeilly 1980) and Newcastle (Newson & Newson, 1974).

However, these studies also showed a consistent and rapid failure rate of breast feeding. Martin (1978) quotes a figure of 50% of mothers who started to breast feed having stopped by 6 weeks post-partum; West (1980) states that 10% of her sample of Edinburgh women had stopped within the first week and 50% within 12 weeks post-partum. Newson & Newson (1974), in a study of 700 mothers in Nottingham,

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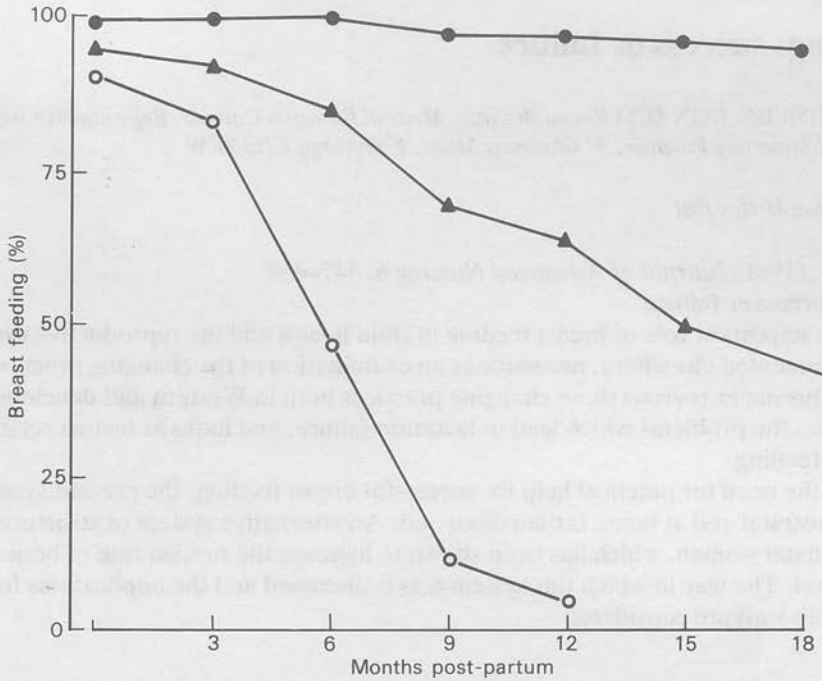
FIGURE 1 *Breast feeding rates.* ●—● *India (rural);* ▲—▲ *India (middle income);* O—O *Sweden.*



found that over half of their mothers stopped breast feeding by 4 weeks post-partum. Hytten *et al.* (1958) reported that in their study of 106 primiparae, 74 of them gave up breast feeding within 3 months.

Perhaps the lowest figures came from Arneil (1967) who reported that in 1967, 69% of all babies in Scotland were not breast fed at all, and only 5% were breast fed beyond 4 months of age.

Developing societies

The picture in developing societies is different. Figures quoted in Kneebone (1976) show a falling incidence of breast feeding in Chile (20% at 6 months), Jamaica (10% at 6 months) and Hong Kong (16% at 6 months).

The most recent and comprehensive figures appear in the World Health Organization (1979) collaborative study, where it can be seen that the rate of breast feeding is declining, both in numbers starting to feed and in numbers continuing (Figure 1).

One report from a Chinese population in Sarawak (Kol 1980) highlights the effect of the changing patterns on one individual population. It was noted from a questionnaire sample of an urban population that despite the traditional Chinese practice of rest and isolation of the young mother for the first 30 days, only 67% of the women breast fed at all, and only 10% fed for longer than 3 months. One interesting point was the rate of breast feeding among Chinese-educated Chinese mothers was 80%, while among English-educated Chinese mothers it was only 37·5%, the duration of feeding being the same in both groups.

The hint of the effect of Western practices on populations where breast feeding used to be the norm was further expanded by Goel *et al.* (1978) who examined infant feeding practices among immigrants in Glasgow. They found that most of the Asian, African and Chinese mothers interviewed had not wanted to breast feed after arriving in Britain, and those who chose to breast feed had a relatively short duration of breast feeding.

THE REASONS FOR FAILURE OF BREAST FEEDING

'Believe this solemn truth; almost every women is capable of supporting her babe;... when it is confined

altogether to the breast, it gains strength every day and defies disease.' (Smith 1792).

It is unlikely that the large numbers of women failing to breast feed do so because of a true physiological incapacity to produce enough milk. Two arguments can be advanced in support of this.

In societies where breast feeding is the cultural norm, 100% of mothers start to breast feed and 98–100% continue beyond 6 months (WHO 1979). It is unlikely that these mothers are physiologically different from mothers in other societies where large numbers complain of 'insufficient milk'.

Selection pressures in the human species for the ability to produce milk will be strong; a physiological inability to produce milk would be one of the genetic characteristics most susceptible to the selection process.

Therefore the reasons for failure of breast feeding will be examined in terms of environmental factors which effect the mother and the baby.

Many inter-related factors have been shown to affect the success of breast feeding. In the early establishment of lactation physical factors play a major role. These include flat and sore nipples (Gunther 1945, Waller 1948, Newton 1952) and engorgement (Waller 1946, Gunther 1973, West & McNeilly 1979). The Martin (1978) report on breast feeding which covered a sample of 2000 mothers in England and Wales, stated that 31% of mothers who started to breast feed discontinued lactation within the first 2 weeks. Problems with breast feeding in the first week were mainly physical difficulties, e.g. getting the baby to take breast (31%), painful engorgement of the breast (60%), painful stitches, making feeding difficult (21%), sore nipples (41%), and 'insufficient milk'(13%).

These problems are very different from the problems reported by women in the same study in the later weeks of lactation, where the main complaints are of the baby crying due to colic or wind and the feeling of 'insufficient milk' due to the baby appearing hungry. Sixty-one per cent of those mothers who stopped by 6 weeks complained of 'insufficient milk'.

Sjolin *et al.* (1977) in a retrospective study of 298 mothers in Uppsala, Sweden, showed that by 12 weeks post-partum only 19% of mothers were still breast feeding at all, and only 12% of these mothers were fully breast feeding. The most common reason for discontinuing lactation was that the 'milk dried up'.

A sample of 108 mothers in Dundee (Salariya *et al.* 1980) showed that 73% of mothers who stopped breast feeding before 12 weeks blamed a 'poor milk supply' and a further 13% blamed an 'irritable baby'.

West (1980), studying a sample of 533 mothers and babies in Edinburgh, found that of the 41% who discontinued lactation before 12 weeks, 72% complained of an inadequate milk supply, unsettled baby or frequent feeding.

The large and comprehensive survey (Newson & Newson 1974) of 700 mothers and babies in Nottingham in the early 1960s showed that although 83% of women were breast feeding at 4 days after birth, only 60% were still feeding at 2 weeks. Seventy-two of the breast feeding failures were attributed to the 'unsuitable quality' of their milk.

A report from Aberdeen (Hytten *et al.* 1958) of a study of 106 primiparous women reported that excessive crying and inadequate lactation were the major factors leading to a cessation of lactation.

Figures from the WHO (1979) collaborative study show that the major reason now given by mothers in developing countries for cessation of lactation is the feeling of 'insufficient milk'. The extent to which this is a response to Western practices and to the availability of an alternative source of infant food must be questioned. It can therefore be seen that the most common reason for discontinuation of breast feeding is the mothers' feeling of lack of milk.

FACTORS AFFECTING THE SUCCESS OF LACTATION

Certain factors have been shown to be important in affecting the success of breast feeding. These include previous breast feeding experience (West 1980), age of mother (*British Medical Journal* 1969), cultural practices (Goel *et al.* 1978), embarrassment (Bentovim 1976, Newton & Newton 1967), paternal enthusiasm (Howie 1980) and timing of the decision to breast feed (Thomson 1978). The early establishment of lactation and the effects of social class appear to be two of the factors with the most profound effect and will be examined in detail.

Factors in the first few days

There is some evidence to suggest that length of labour may affect the duration of breast feeding (Jackson *et al.* 1956). However, these effects may be confused by the effects of obstetric medication on both mother and infant (Brazelton 1961, Bernal &

Richards 1970) in the first 10 days. Bernal & Richards (1970) show that more medication and a longer labour affect the success of breast feeding. They showed that drugs given in labour led to altered interaction between mother and infant in the first 10 days, such as altered sucking patterns and more difficult feeding interactions. They also stated that the less successful breast feeders showed different interaction patterns. These include less affectionate touching of their babies and a reduced amount of non-nutritive suckling time in the early days of lactation, suggesting that the basis for successful lactation may be affected by performance in the first few days. This suggestion receives support from various sources.

A report from Dundee (Salariya *et al.* 1978) examined a sample of 111 primiparous mothers. These mothers were randomly allocated to four groups, having either early (within 10 minutes of delivery) or late (4–6 hours post-partum) contact with their babies and following a regime of either frequent (2-hourly) or routine (4-hourly) feeding for their stay in hospital. A comparison of these groups showed that lactation was established sooner in the frequent groups, and breast feeding continued for longer in the groups who had early contact with their babies (Table 1).

TABLE 1

		Early 2-hourly $n=29$	Early 4-hourly $n=27$	Late 2-hourly $n=27$	Late 4-hourly $n=28$
Time of lactation	≤48 hours	16	6	14	4
	>48 hours	13	21	13	24
Length of breast feeding (median) (days)		182	140	112	77

The classic study by Illingworth & Stone (1952) showed that 'demand' feeding in the early days led not only to more successful breast feeding, but also to fewer nipple problems and less engorgement.

Hytten (1954) showed that the milk yield at the end of the first week was related to the duration of lactation. It has now been shown (Howie *et al.* 1981) that milk intake by babies on Day 3 and Day 6 of lactation gives an accurate prediction of breast feeding success. Thus breast feeding performance can be affected, and assessed, in the very early days of lactation.

A study in Sweden (De Chateau & Winberg 1978) on 42 primiparous women in 1974–1975 looked at the effect of early close contact (15 minutes of immediate skin-to-skin contact and suckling) compared with a control group who were given 'routine care' (immediate separation for routine weighing, bathing, etc. of the baby before it was returned to a crib beside the mother's bed). It was found that full breast feeding at 3 months was twice as common in the early contact group as the routine group.

This study adds support to the many others on the beneficial effects of early contact on parent–infant interaction, e.g. Sosa *et al.* (1976), Bernal & Richards (1970) and Klaus & Kennell (1976). It may be that the success of breast feeding is a visible measure of the success of the mother–child relationship, where other psychological/social parameters are more confusing. It is very difficult in studies of this kind to find groups of women in whom social and psychological factors are comparable and in whom the effects of participating in a study is not in itself going to override the effects of the factor to be studied. To select one woman to be studied and another to be a control may be ethically very difficult and is in practice well nigh impossible. The results of these studies should be interpreted with caution, but they do give a clear indication of the importance of the early days in the establishment of lactation.

The effect of social class

The effect of social class on both the decision to breast feed and the duration of breast feeding is evident in a large number of studies (Hytten & Thomson 1955, Jackson *et al.* 1956, Hytten *et al.* 1958, Newson & Newson 1974, Bacon & Wylie 1976, Sjolin *et al.* 1977, Houston *et al.* 1981). In Western society, the upper social classes more often choose to breast feed and are more successful than the lower social class groups. But it should be noted that, although a social class effect exists in developing societies (WHO 1979), the effect is opposite; the trend among the economically advantaged in developing countries is towards more bottle feeding and the early discontinuation of breast feeding.

It is interesting to speculate on the factors which are at work within our own society which lead to this effect. There are no studies which have successfully separated the possible factors, such as sub-cultural norms, increased privacy, acceptance of sexuality, access to reading material, peer group support, etc.

Richards (1975) outlined some mechanisms which he considered to be important. He suggested that middle class mothers were:

1 Less likely to interpret crying as a personal failure on their part to produce enough milk for their baby.
2 More highly motivated to breast feed because increased reading makes them more aware of the benefits of breast feeding.
3 More willing to adapt their routines and schedules to the baby's demands (perhaps it is fair to add that in many cases they are also more *able* to adapt).
4 Better informed with more realistic expectations of the baby's demands.
5 Better able to find and use resources; and then to adapt advice given to their own situation.

Richards (1975) also suggests that these abilities are founded on three points, which may be the factors which also lead mothers to choose to breast feed initially:

1 They know the advantages of breast feeding.
2 They place the child's needs above their own convenience and comfort.
3 They are less disturbed by issues of modesty and sexuality.

These points, although very generalized and in some cases, apparently based on preconceptions of social class differences, give some insight into some of the factors at work within social class. It should also be noted that almost all points may be explained by increased education.

Sexual responsiveness

A paper by Newton (1973) describing the inter-relationships between sexual responsiveness, birth, and breast feeding, gave some information on the sexaul characteristics associated with breast feeding and went some way towards explaining social class differences. An acceptance of her own sexuality was necessary to prevent feelings of guilt in the woman if she experienced any of the sexual feelings described. This work has been supported in studies by Sears *et al.* (1957) and Masters & Johnston (1966) who found that breast feeding mothers had a higher level of sexual interest and a greater tolerance of sexual play in their own children. This awareness of the sexual aspect of breast feeding, potentially leading to guilt, may perhaps partly explain the otherwise disheartening statement in the report by Hytten *et al.* (1958) that *none* of the mothers who breast fed for 3 months or more found it physically or emotionally pleasurable.

Further work is urgently needed to identify the factors within the social class groupings which affect breast feeding. Therefore it is important not only to examine reasons for failure, but also reasons for success, in breast feeding.

RESOURCES AND SUPPORT SYSTEMS

The new breast-feeding mother in Western society is helped and advised by two different and distinct professional systems: the hospital and the community support systems. Each of these consists of a variety of health professionals, each an individual with their own approach, experience and knowledge. The mother is also taught, admonished and advised by the barrage of handbooks, textbooks and magazine articles on the subject of infant feeding. Bringing up the rear of this army of advice — and sometimes way out in front — are her grandmother, sister, neighbour, husband and the women in the next bed. To sort out the inevitable conflict of advice must pose a problem too great for many mothers.

Hospital support — initiation of lactation

It is important to remember that it is the feelings of the mother with which we are most concerned. Newton & Newton (1978) have shown that stress and anxiety can switch off the oxytocin reflex which controls the release of milk to the infant and therefore that an anxious mother is a mother in danger of lactation failure. It has been noted that staff are not always aware of the mother's emotional involvement with her infant's feeding. A recent study from Newcastle (Laryea 1980) reported that the top priority of the midwifery staff of the postnatal wards was 'health of the mother', with infant feeding coming third on their list. Mothers however, left no doubt that their own immediate postnatal period was dominated by their preoccupation with infant feeding; the success of feeding was seen as a measurement of their own performance as mothers. If the baby was feeding well, they were happy in themselves — other factors such as painful stitches, piles, etc. were of secondary importance. It is perhaps necessary to point out to postnatal staff the central role played by infant feeding in affecting maternal emotions. It is possible that awareness of this fact may be instrumental not only in

improving the success of breast feeding, but also in reducing the incidence of post-partum depression.

Recently, a report from Nottingham (Filshie *et al.* 1980) highlighted the practical difficulties of implementing feeding regimes which incorporate flexible feeding times and early contact. However, this report concluded that the needs of the mothers and babies must be the priority not the hospital routine. A large proportion of mothers in this survey complained of the 'conflicting advice' experienced in hospital; perhaps a little organization and thought would go some way to reducing this, at least within the ward system.

'Good, ongoing communication, both verbal and written, will drastically reduce conflicting advice, especially when carried on within a sensible, well-formulated ward policy' (Thomson 1978).

Community support

A great contribution to the success of the breast-feeding mother can come from written information, in books, magazines, etc. There are now many handbooks of child care and breast feeding, some good, some bad, all of which offer information and advice. Books on health aspects which give information on basic physiology such as *Our Bodies, Ourselves* (Phillips & Rakusen 1979) are very important. However, there are two major drawbacks to this kind of approach. The information tends to be limited to the more literate mothers, and the advice given can never be geared to the individual.

It is interesting to note that the 'doula', an experienced mother given the task of helping new mothers, is a consistent feature in traditional societies (Raphael 1976) offering accurate and timely support and advice.

Consistent support in the 'doula-less' (Western) society can be given effectively by the father, or by any caring individual in frequent contact with the mother. This amount of encouraging support may have a beneficial effect on breastfeeding in itself (Jennings & Davies 1980). There is also, however, a need for informed and detached professional advice. In British society, the midwife cares for the mother in the very early days following delivery, both in hospital and at home, for the first 10 days in Scotland, and the first 28 days in England and Wales. The midwife is often the main provider of care, advice and professional support to the mother and her infant. Thereafter, responsibility for maternal child care is the preserve of the health visitor, who is a trained nurse, with training in obstetrics; she may be a midwife, and has had further training in child development and preventive care. Health visitor training has been developing since the first statutory qualification was instituted in 1909 (Wilkie 1979). Since then, their field of responsibility has grown to include geriatric care, mental handicap, health education and maternal child health. It is a demanding post, and the increasing health needs of a growing community make it difficult to fulfil expectations. It is therefore important for the health visitor to make the best use of her limited time — it is also important to assess her central function in the field of maternal and child health. As had been stated by a health visitor recently 'Health visiting covers very broad work areas; but professional mastery necessitates much narrower and deeper focus on client needs and objectives of service' (Orr 1978).

Structure of the home support system

Leaving aside the role of the health visitor it is perhaps less important to discuss who should help the breast-feeding mother than to discuss the structure of the support system.

It has been shown that increased education and enthusiasm of the staff can increase the success of breast feeding (Sloper *et al.* 1975). However, there do not appear to be any studies which have compared different structures of post-natal support and it is difficult to decide whether the beneficial effect of increased enthusiasm is mediated through more accurate advice, more frequent visiting or a combination of several factors.

One study of antenatal care and support by midwives suggested that an important factor in maternal emotions was the relationship established with one consistent person (Flint 1979). This conclusion has been supported, and another mechanism suggested, by a study recently completed in Edinburgh (Houston *et al.* 1981). This study showed that a programme of structured visiting by one person and based on an appointments system, produced a breast feeding success rate of 100% at 12 weeks, as compared to 75% of a control group. It was very significant that none of the structured visiting group stopped breast feeding due to the common complaint of 'not enough milk'. It is suggested that one of the most important factors in this study was the fact that the mothers knew to expect a visit on a certain day and therefore would tolerate their problems until advice arrived.

This speculation is strengthened by the results of work in other areas. The theory of locus of control (Lightbody 1979) states that if an individual is aware of the existence of an escape mechanism, or a source of help, his tolerance to any painful stimulus, physical or psychological, is increased. This would suggest that to provide structured and predictable points of help and advice will increase tolerance of problems.

A study of mothers' perceptions of the health visitor (Orr 1978) stated that of the working-class sample of mothers interviewed, 72% of the mothers would prefer to know when the health visitor was coming to see them. This study also pointed out that 70% of the health visitors involved never gave notice of their visits.

Yet a study of structured visiting of the elderly by health visitors concluded that visits by appointment are both successful and preferred by the clients (Luker 1979).

Another advantage of the structured visiting system is the more efficient use of time on the part of the personnel involved. At present, the majority of health visitors give no warning to mothers of their visits with the result that a sizeable proportion of their calls take place when the mothers are out or when the mothers are busy or have visitors. Health visitors defend this system on the grounds that they wish to 'catch the mothers as they are' — this surely reflects the original and archaic role of the health visitor as a sanitary health inspector and undermines the construction of a trusting relationship with the mother.

The suggestion that predictable, structured support may lead not only to an increased rate of breast feeding, but also perhaps to happier mothers and families in our community is supported by personal observation and repeated remarks by mothers who state that they carried on breast feeding because they knew that help — in the form of a midwife, health visitor or friend — was available.

At a time of lack of resources, it is perhaps a particularly attractive idea that what is required is not extra personpower, but organization and structure of existing resources to best fulfil the needs of a vulnerable section of society. Not only will the mothers and families benefit, but the job satisfaction of the professional will undoubtedly increase as more successful and trusting relationships are established with her clients, the mothers.

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DO BREAST FEEDING MOTHERS GET THE HOME SUPPORT THEY NEED?

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General advice might also be given not to drink *any* unboiled water in other countries where the standard of hygiene and sanitation may be suspect. Giardia cysts can survive in cold water for one to three months but are killed by exposure to a temperature of 50°C (Wolfe, 1975). In practice, this may mean consuming only tea, coffee or alcoholic beverages and although it may not eliminate the risk of giardiasis completely (Vella, 1977), it should reduce it considerably. No ice should be taken in drinks as in most cases this is prepared from unboiled tap water.

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Do Breast Feeding Mothers get the Home Support they Need?

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Summary
The outcome of breast feeding was studied in 28 mothers who received consistent additional home support in the form of fortnightly visits until weaning. Compared with a control group of 52 mothers who received routine support, the mothers in the study group had a longer duration of breast feeding and a later introduction of artificial milk or solid food.

None of the mothers in the study group stopped breast feeding because of 'insufficient milk' compared with 19% of the controls. The average number of home visits by health visitors as recalled by the mothers was 2·7 per patient in both groups and it is asked whether this level of support is sufficient for breast feeding mothers.

Introduction
In the last few years, there has been an encouraging increase in the number of mothers choosing to breast feed (Martin, 1978; Howie and McNeilly, 1980). Despite this, many of these mothers either give up or introduce supplementary feeds within the first 12 weeks (Sloper *et al.*, 1975; Eastham *et al.*, 1976). The commonest reason given by the mothers for early discontinuation is 'insufficient milk' (Sjölin *et al.*, 1977; Martin, 1978). This report was prompted by the clinical impression that mothers participating in research projects during lactation breast fed for longer than would be anticipated from the success in the general population. It seemed probable that participation in a research project gave the mothers extra support and more opportunities to discuss their anxieties and problems.

Several studies have suggested that close personal support may encourage more successful breast feeding (Creery, 1973; Sloper *et al.*, 1977) but have not included control populations for comparison. The present study has compared the effect of one pattern of additional home support for breast feeding mothers with the routine care at present offered by health visitors.

Patients and Methods
All patients were mothers who left hospital breast feeding, having delivered mature, normal birth weight babies in the Simpson Memorial Maternity Pavilion, Edinburgh. All the mothers were resident in Edinburgh and, since there is some evidence that

steroidal contraception may inhibit milk production (Gellen, 1977), none were intending to use hormonal contraception. The study group consisted of those mothers who met the entry criteria and were delivered within a period of 10 weeks. The control group were the comparable mothers who delivered in the 20 weeks subsequent to the period of recruitment to the study group. In this way, 28 mothers were recruited to the study group and 52 to the control group. Only three mothers declined to participate in the study.

Study Group
Patients in this group were visited in the post-natal ward by one of the two midwifery sisters involved in the study; all home visits were then carried out by the same sister and were additional to the routine visits by the health visitors. All mothers were visited once by the sister in the first week following discharge and thereafter visits were arranged fortnightly at times which were convenient to the mother. Each mother was given a telephone number through which she could contact the sisters during the day if any problems occurred. Routine records of the babies' feeding progress were kept by each mother; number of breast feeds, any extra bottle feeds and time of introduction of solids were noted. This information formed the basis for discussion at each visit.

The visits were conducted on a non-directive basis, merely giving the mothers the opportunity to raise problems. Decisions regarding feeding were made by the mother herself and no pressure was brought on her to continue breast feeding against her will. Visits were made fortnightly until the cessation of breast feeding.

Control Group
Mothers in this group received the normal care from the community services, but did not have the extra visits from the midwifery sisters. Twenty-four weeks after delivery, control mothers were interviewed at home about the progress of breast feeding.

Babies
Two babies in the control group were admitted to hospital, one because of respiratory infection and the other with failure to gain weight. The other babies were thriving.

Statistics
Comparisons between the groups were made using the chi square test.

Results
Comparison of groups (Table I)
No significant differences were found between the two groups in respect of age, parity or social class distribution. The number of routine home visits by health visitors as recalled by the mothers showed a wide range from one to ten visits per patient but the average number of 2·7 visits per patient was the same in the two groups. The study group received an additional $11{\cdot}5 \pm 0{\cdot}5$ visits per patient during the first 24 weeks from the sisters involved in the study.

Duration of breast feeding
In the study group, all mothers continued breast feeding until 12 weeks and 24 out of 28 (86%) were still feeding at 24 weeks; compared with the controls, the proportion of mothers breast feeding in the study group was higher throughout the 24 weeks of observation, the differences being significant at 12 weeks ($p<0{\cdot}01$) and 20 weeks ($p<0{\cdot}05$) respectively.

Table I: Comparison of age, parity, social class and number of home visits by health visitor or sister in control and study groups

	Control n=52	Study n=28
Age (mean±SD)	29±3·7	29±4·3
Parity		
Primigravid	46%	46%
Parous	54%	54%
Social Class		
I	30%	39%
II	35%	36%
III and IV	35%	25%
Visits by Health Visitor (mean±SD)	2·7±1·9	2·7±1·6
Extra visits	0	11·5 (±0·5)

Effect of Social Class (Figure 1)
The effect of social class was shown by a progressive fall in continuation rates down the gradient of social class.
In social class I, no differences were observed between the study and control groups, the continuation rates at 24 weeks being 91% and 83% respectively. Differences were observed between the study and control groups in social class II ($p<0·05$ at 20 weeks) and social classes III and IV ($p<0·05$ at 12 weeks). There were no social class V mothers in either group.

Introduction of supplements (Figure 2)
Additional food in the form of formula milk or solids was introduced at an earlier stage in the control group as compared with the study group. This difference was most noticeable at 16 weeks when 83% of the control group were giving supplements compared with 28% of the study group ($p<0·001$); this difference was found in social classes I and II ($p<0·001$ in both groups) but not in social classes III and IV.

Reasons for stopping breast feeding (Table II)
The main reasons, stated by the mother herself, for stopping breast feeding within the first 24 weeks are shown in Table II. In the control group, 19% stated that either 'insufficient milk' or an unsettled baby was the major factor. None of the study group gave either of these reasons for stopping breast feeding. By contrast, the remaining reasons, not related to the adequacy of the milk supply, were given by 16% of the control and 14% of the study group.

Discussion

The structure of modern society frequently isolates the young mother from the support of her friends and immediate family. This feeling of isolation may explain to a considerable measure why so many mothers stop breast feeding soon after leaving hospital. The present study has shown that in a group who were given consistent home support, it was possible to achieve a very high degree of successful breast feeding with 100% of the study

Table II: Reasons for stopping breast feeding before 24 weeks in control and study group mothers

Reason Given	Control (n=52)	Study (n=28)
'Not enough milk'	8 } 19%	—
Unsettled baby	2 }	—
Mother tired	2	2
Baby ill	2	—
Breast engorgement	2	—
Maternal choice	1	1
'Baby refused breast'	1	—
Infected nipples	—	1
Total who stopped	18 (35%)	4 (14%)

group still feeding at 12 weeks, and 86% at 24 weeks. The commonest reason for discontinuing breast feeding is 'insufficient milk' but this reason was never advanced by any of the mothers receiving regular visits. It is probable that a complaint of 'insufficient milk' usually indicates a lack of confidence on the mother's part rather than a true physiological incapacity to produce milk. The mother who loses confidence may introduce a bottle and this, in turn, will reduce the strength of the suckling stimulus and the adequacy of the subsequent milk supply. The increased confidence of the mothers receiving regular visits may explain why they were willing to postpone the introduction of supplementary or complementary feeds for longer than the mothers in the control group.

Social class has a major impact both on the incidence and the duration of breast feeding (West, 1980) and the beneficial effect of the additional visits on the duration of breast feeding was more obvious in the lower social class groups than in social class I. It would be wrong, however, to assume that mothers from social class I do not require additional support and the impact of the visits could be seen in the later introduction of supplementary feeds. The optimum timing for the introduction of supplementary food is still a matter of controversy (Waterlow, 1979; Jelliffe, 1979) but none of the babies in the study group appeared to suffer from the later introduction of supplements.

In this study, it was found that one visit every two weeks was sufficient to provide adequate support. Every visit, as far as possible, was made by the same sister and besides achieving close rapport, this ensured continuity of counselling. It is common practice for health visitors to visit at unscheduled times but, in this study, all visits were made by appointment. This had the advantage that no time was lost on wasted visits; furthermore, mothers found that they could cope with existing problems until the time of the next arranged visit.

Davies (1979) has drawn attention to the contented but undernourished breast-fed baby, and a pattern of regular visits would help in the early diagnosis and treatment of such cases.

Although the duration of breast feeding was used as the end-point of this study, the greater success in the mothers receiving additional support may reflect greater satisfaction

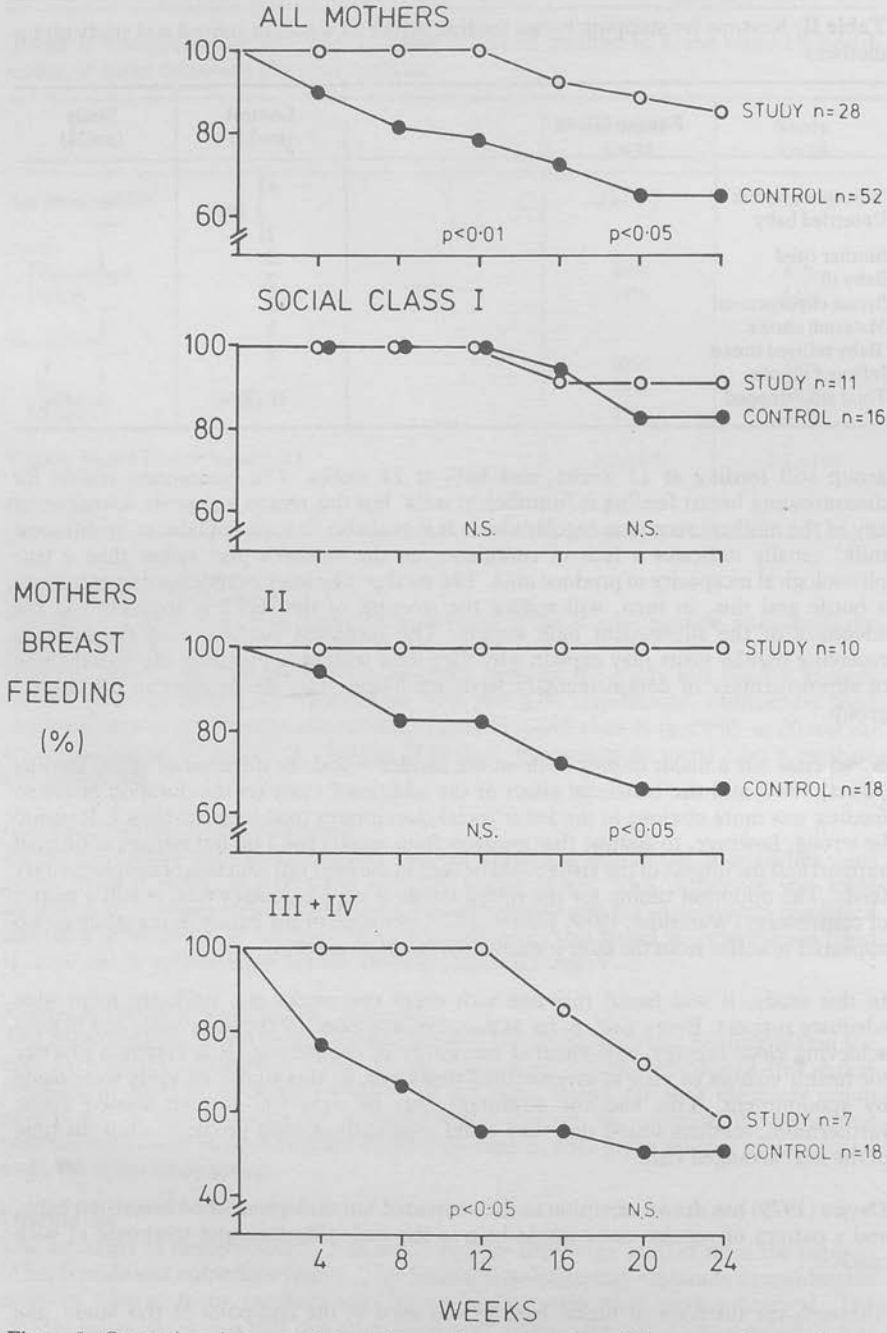

Figure 1. Comparison between study and control group mothers of the proportions still breast feeding 24 weeks after delivery.

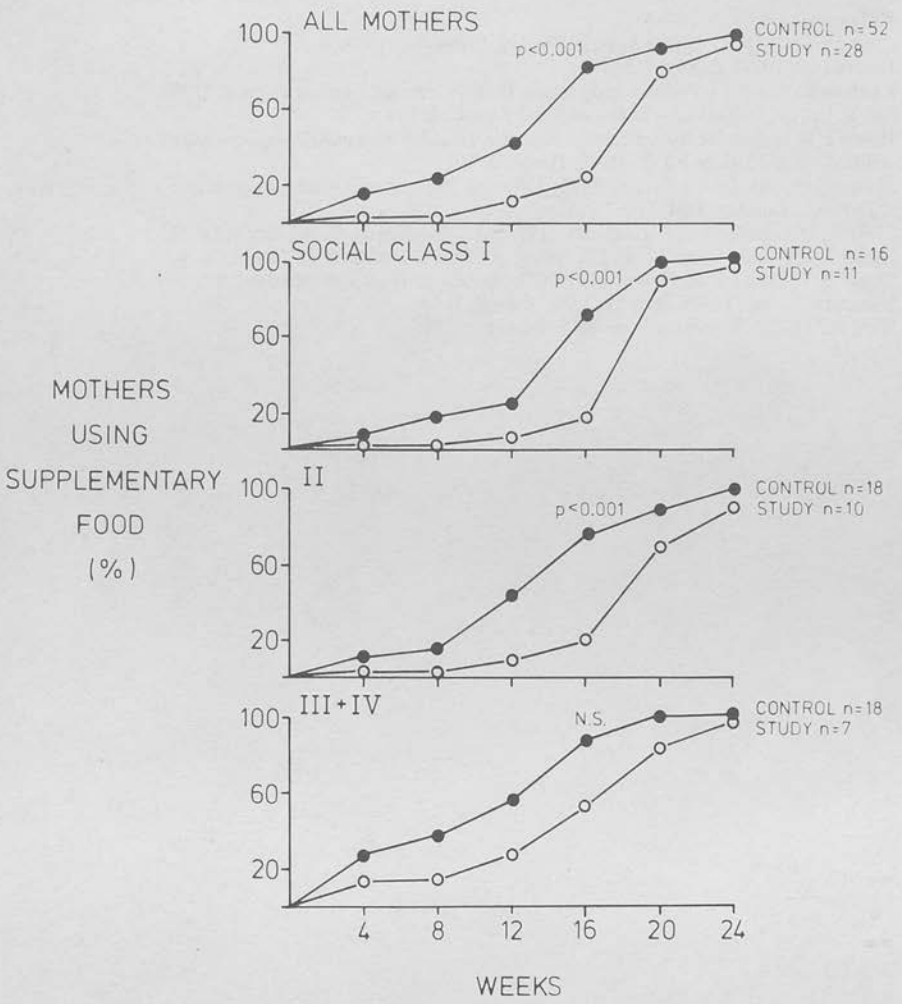

Figure 2. Comparison between study and control group mothers of the proportion of mothers who had introduced supplementary food (additional bottles or semi-solids).

with the experience of early motherhood. All the mothers said that they greatly appreciated the opportunity to share their feelings and their anxieties about the baby with a sympathetic listener and some had no other available confidant. The average number of home visits by the health visitors throughout breast feeding, as recalled by the mothers, was 2·7 in both the study and the control groups. It is questioned whether this level of support is sufficient to meet the needs of the breast feeding mother.

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The importance of support for the breast feeding mother at home

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A pleasing development in postnatal care is the increasing number of mothers who are choosing to breast feed. In some areas, 80 per cent or more new mothers may start to nurse their own babies.[1] However, in contrast to the high numbers who start breast feeding, a much smaller number continue to breast feed. In our society, more than 50 per cent of the mothers may give up within 12 weeks.[2,3] Is this high discontinuation rate inevitable?

It is easy to blame the mothers for lack of enthusiasm but the majority are very disappointed and guilty when they stop. The most common reason given by mothers themselves is 'insufficient milk'[2] but it seems unlikely that nature would have decreed that half the population are physiologically incapable of feeding their own babies. Some studies strongly suggest that the problem is cultural and not physiological. A recent large study by WHO[4] showed that all mothers from poor areas of developing countries start to breast feed and virtually all succeed. The problem of poor continuation rates is only seen in western societies and among the economically advantaged of the developing worlds.

A recent study from Edinburgh suggests that the common complaint of 'insufficient milk' is a symptom and not a cause.[5] All mothers in a group who were given extra, consistent support continued to breast feed for 12 weeks or more, and never complained of insufficient milk. This was quite different from a carefully matched group of control mothers. What, then, are the fundamental problems facing breast feeding mothers in modern society, and what can we do to help? Three cases are presented which illustrate the sort of problems which occur and the response of the mothers themselves, their own families and the health services.

1. Successful breast feeding

Mrs J D was a 30 year old para I, whose first child was an active toddler of two and a half years old. She had a normal delivery of a healthy girl, and her postnatal stay in hospital was uneventful. She was fully breast feeding and quite confident on discharge from hospital on the fourth day.

During the first few weeks at home, Mrs D found that the baby demanded frequent, sometimes two hourly feeds. The community midwives who visited her up to ten days postpartum suggested that she try to leave the baby for longer periods between feeds. However, as she had read about breast feeding, and knew that some babies require frequent feeding in the early days, she decided not to cut down the number of feeds, but to feed as often as the baby wanted for as long as possible.

As the frequent feeding continued and she became very tired, Mrs D found that even information gained from books and encouragement from her husband were not enough to prevent the feeling that perhaps the baby was hungry, and that she was not producing enough milk. When the baby was about four weeks old, she spoke to her health visitor at the clinic. The health visitor told her that the baby's weight gain was steady, that the child was obviously getting enough, and that the frequent feeding was a normal occurrence. This advice reassured her and reinforced her own knowledge. With continued advice and support from the health visitor, her husband, and a friend who had breast fed, Mrs D continued without supplementary feeding until the baby's sleeping pattern settled down at about six weeks postpartum. She was still successfully breast feeding at 12 weeks.

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When asked about the most important sources of help and advice, Mrs D said that a combination of factors had been at work. The most important factor was the consistent and informed reassurance from her health visitor. Support from her husband, and from friends who had breast fed themselves, was also very helpful. Although knowledge gained from books was helpful, she felt that this on its own was insufficient. The advice tended to be fairly prescriptive, and it was difficult to adapt to her own individual case. Without all this help, Mrs D admitted that she would have changed to bottle feeding after four weeks, although this would have greatly upset her. She was delighted that the necessary advice and reassurance had been available.

2. Unsuccessful breast feeding

Mrs L was a 36 year old primiparous woman, who had a normal delivery of a healthy girl. She was discharged fully breast feeding on the seventh day. The feeding went very well until four weeks, when Mrs L went to the baby clinic for a routine visit. It was noted by the health visitor that the baby had 'only put on a pound in three weeks' — slightly below the average weight gain. The baby was very alert and active. She advised Mrs L to give an extra bottle at night, until the weight came back to normal. Mrs L decided not to do this immediately, as she had heard that giving supplementary bottles reduced the amount of breast milk. However, she began to doubt the adequacy of her supply for the first time, and when her own mother suggested that the baby was hungry after one unsettled night, she gave the baby a bottle feed. She continued to give bottle feeds at night, and then also in the morning, and found that her own milk supply decreased along with the reduction in the suckling stimulus. At five weeks, she decided to abandon breast feeding, as she did not like feeding with breast and bottle. The reason given by Mrs L for stopping breast feeding was that she didn't have enough milk.

3. Unsuccessful breast feeding

Mrs G was a 22 year old mother having her first baby. She had a normal delivery of a healthy boy. In hospital, she required some help because of engorgement and difficulty with the baby taking the breast. By the time she was discharged home on the sixth day, however, she was fully and confidently breast feeding.

The baby appeared contented, and slept well between feeds, waking regularly every three hours to be fed. This three hourly feeding surprised Mrs G and her relatives, whose only previous experience of babies was with bottle feeding. They expected that the baby would sleep for at least four hours between feeds, and Mrs G's own mother and her aunt advised her that the baby was hungry and needed a bottle. This undermined Mrs G's confidence in her own milk supply, and she began to think that she could not carry on with breast feeding. Her health visitor dropped in at this point (three and a half weeks). Her advice was that breast feeding was best, and that Mrs G should keep feeding. However, she did give the mother a sample of powdered milk 'just in case'. Mrs G was not told at any stage that three hourly feeding was quite normal in young babies. The GP whom Mrs G also saw at this stage said, like the health visitor, 'continue breast feeding'; but gave no practical advice or reassurance.

Mrs G found herself very confused by the conflicting advice from her family and health professionals, and as the three hourly feeding continued, and her mother continued to insist that the baby was hungry, she gave the baby one bottle 'to see if he would take it'. He took it quite happily, and two days later Mrs G stopped breast feeding altogether, at four and a half weeks. She was very

disappointed and distressed, but she admitted at the end of the interview that she would bottle feed her next child from the start, to avoid the problems and confusion both for herself and the child.

Discussion

Several points can be made from these cases. The first history illustrates the strong positive impact which the health visitor can have on the course of breast feeding. Although this mother enjoyed many advantages such as her own enthusiasm, her husband's encouragement, and a sound knowledge of breast feeding, she still required the professional reassurance from a health visitor whom she trusted.

The second case shows how quickly breast feeding can be undermined by the introduction of supplementary feeding. It is likely that the breast feeding failed because of the combined effects of reduced suckling and a loss of maternal confidence. The extra feeding was advised on the basis of a single weighing; it could be asked whether it was right to offer such threatening advice on the basis of such slender evidence. Surely it would have been better to reassure the mother and to continue to watch the baby's weight?

The third case illustrates a mother whose relatives undermined her confidence and gave her incorrect expectations. In such circumstances, the health visitor's role is of special importance. Although the health visitor gave sound advice, she undermined its effect by offering a bottle 'just in case'. Similarly, the patient did not get the reassurance she needed from the general practitioner. The failure to give the required support was particularly unfortunate because it influenced the mother's attitude not only to this baby, but to future ones as well.

These cases show the importance of the right advice at the right time to help mothers to continue breast feeding. This advice, to be effective, must be based on a knowledge of normal breast feeding patterns and sound physiological principles, and on an awareness of the new mother's need for reassurance and sympathetic guidance. Do we give breast feeding mothers this support?

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